A REVIEW OF THE GENUS *DISTICTELLA* (BIGNONIACEAE)[1,2]

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Abstract

Distictella Kuntze is a genus of 18 species in the tribe Bignonieae. The species are lianas or less frequently shrubs, and can be recognized by their terete branchlets without interpetiolar glandular fields; usually bifoliolate or less frequently unifoliolate or trifoliolate leaves, often with a trifid terminal tendril; terminal or less frequently lateral inflorescences; usually glandular, campanulate, ± truncate calyces; tubular-infundibular or tubular-campanulate, strongly curved corollas that are white or less frequently purple, often with a yellow throat, pubescent externally and usually internally; ovaries and styles sericeous and poorly demarcated; woody capsules that are non-echinate, and often with both valves convex (slightly compressed) or one convex and one concave and the fruits curving; and bialate seeds (wings sometimes greatly reduced), brown to black, irregularly ridged, and glabrous. Relationships with similar genera are discussed, and a key to the species of *Distictella*, species descriptions, and species distribution maps are provided. The relationships of the species are also discussed, and a new species, *D. lohmanniae* A. Pool, and new variety, *D. racemosa* (Bureau & K. Schum.) Urb. var. *translucida* A. Pool, are proposed. *Bignonia rusbyi* Britton ex Rusby, *Distictis angustifolia* K. Schum. ex Sprague, *Distictella lutescens* C. V. Freire & A. Samp., and *Distictella negrensis* C. V. Freire & A. Samp. are presented as new synonyms of *Distictella racemosa* var. *racemosa*. *Distictella broadwayana* Urb. is presented as a new synonym of *Distictella racemosa* var. *translucida*, and a lectotype is designated for *Distictis racemosa* Bureau & K. Schum.

Key words: Bignoniaceae, *Distictella*, IUCN Red List, Pithecocteniinae.

Distictella Kuntze is a tropical South American genus of 18 species in the tribe Bignonieae that can generally be recognized by the combination of a number of vegetative, floral, and fruiting characters. As most members of the tribe Bignonieae, *Distictella* has bilocular ovaries, and fruits that dehisce parallel to the septum (Gentry, 1980c), and most of the species (as most Bignonieae; Gentry, 1980c) are lianas with compound leaves with the terminal leaflet modified into a tendril. The exceptions are *D. monophylla* Sandwith and *D. laevis* (Sandwith) A. H. Gentry, which are always shrubs, erect to semi-scandent, and *D. campinae* A. Samp. and *D. cuneifolia* (DC.) Sandwith, which are sometimes described as scandent shrubs or as low lianas. *Distictella monophylla* always has unifoliolate leaves and no signs of a tendril, while *D. laevis* can have either unifoliolate or bifoliolate leaves. The bifoliolate leaves of *D. laevis* have a terminal scar or residual tendril. *Distictella campinae* usually has bifoliolate leaves with terminal tendrils common; however, the lowest leaves of a branchlet are sometimes unifoliolate. All material of *D. cuneifolia* observed in this study had bifoliolate leaves, with a common presence of tendrils. All other *Distictella* are lianas with bifoliolate leaves (*D. reticulata* A. H. Gentry is reported to occasionally have trifoliolate leaves; Gentry, 1978b), with a trifid terminal tendril.

All species of *Distictella* have terete (to somewhat flattened) branchlets and lack interpetiolar gland fields. Most have inconspicuous pseudostipules that are lost early, but in *D. arenaria* A. H. Gentry and *D. chocoensis* A. H. Gentry, they are often foliaceous and more persistent. The leaflets are always lepidote and often have additional glands. The species vary in leaflet shape, especially the base, size, venation, and distribution and size of trichomes, and these characters are often very useful in differentiating between the species.

The inflorescence is usually a raceme or racemose panicle, frequently elongate, with numerous flowers, but with only one to three flowers blooming simultaneously. *Distictella pauciflora* A. H. Gentry,

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known only from the type, differs from the other species in its depauperate inflorescence, and a few species (*D. campinae*, *D. laevis*, and *D. monophylla*) tend to have smaller inflorescences but (except sometimes *D. monophylla*) produce several flowers that bloom over a period of time. The flowers of all species of *Distictella* are very similar, and no floral character was found useful in differentiating between species. The calyces are campanulate, pubescent, ± apically truncate and denticulate, and usually have distinct glandular fields. The corollas are strongly curving, infundibular (rarely campanulate), pubescent externally and internally above a glabrous, cylindric base, and are usually white with a yellow throat. A few species are known to have purple corollas: the only collection of *D. pauciflora* has purple flowers, and purple flowers are common in *D. monophylla* and rare in *D. mansoana* (DC.) Urb. and *D. racemosa* (Bureau & K. Schum.) Urb. var. *translucida* A. Pool. The four stamens and stigma are included, with the stamens and staminode inserted at about the same level in the corolla tube. The points of attachment are marked by villous clusters of trichomes or papillae. The nectary disc is large, annular-pulvinate and is sometimes topped with a narrow ovary stipe. The presence or absence of a stipe does not appear to be consistent enough to use to separate species. The ovary and style are covered with appressed trichomes and are difficult to differentiate from each other.

The capsules of *Distictella* are oblong or elliptic (or rarely weakly spatulate), woody, non-echinate, and usually pubescent. *Distictella magnoliifolia* (Kunth) Sandwith is unusual in having a glabrescent capsule. The valves may be convex or slightly to strongly compressed, or one valve convex and one concave resulting in a curved fruit. The shape of the capsule, especially the apex, curving or not curving, drying color, and nature of the midrib are useful characters in recognizing the species. The seeds are bialate and brown with irregular ridges on both the wing and body. In some taxa (*D. campinae*, *D. cremersii* A. H. Gentry, and *D. racemosa* var. *racemosa*), the wings are slightly to greatly reduced, opaque, and subcoriaceous. More often, the seeds are distinctly transversely oblong with the wings well developed, membranous, and hyaline. The wing may be well demarcated from the seed body or not. Seed characters are very useful in recognizing the taxa.

Early authors (Bureau, 1864; Bentham, 1876) recognized this genus based on fruit and seed characters, but Schumann (1894), Melchior (1927), and Gentry (1976) placed more emphasis on vegetative and floral characters; the terete stem combined with curved flowers serve to separate *Distictella* from its closest relatives, probably *Pithecoctenium* Mart. ex Meisn. and *Distictis* Mart. ex Meisn. (Gentry, 1976).

Bureau and Schumann (1896) and Sampaio (1935) placed a great deal of emphasis on inflorescence type and number and arrangement of calyx glandular fields in distinguishing the species within *Distictella*. Sandwith (1953) suggested that the inflorescence type was not a useful character in this genus, as in many species there is a full range from racemes to racemose panicles, and Gentry (1982) found the number of glandular fields on the calyx to be as variable in the flowers of an individual inflorescence as between species. Neither character was found to be useful in this study. Sandwith (1957) and Gentry (1980b) both stressed that the flowers of all species of *Distictella* are very similar and are not useful in distinguishing the species. Sandwith (1963) commented that most species in the genus are based on vegetative characters and stated, "It is significant that the floral characters of all these plants seem to be essentially the same, apart from minor differences of measurement, nor does it seem probable that the fruits and seeds will afford good taxonomic distinctions" (1957: 363). In 1963, he went further in suggesting that the differences in vegetative characters might "be induced by habitat and other causes" (Sandwith, 1963: 49). This study has found a strong species specificity to particular habitats, but has also found strong fruit and seed characters that correlate with the vegetative ones. Gentry, in his new species descriptions (1978a, b, 1980b) and in his keys in floristic works (1982, 1997), placed great emphasis on vegetative characters. Gentry (1980b: 101) stated, "All species of *Distictella* have very similar flowers and are distinguished primarily by type of pubescence of the vegetative parts and to a lesser extent by fruits. While pubescence characters are notoriously plastic in many genera of Bignoniaceae, in *Distictella* they are highly constant and correlated with distinctive ecologically and geographically defined entities." This study basically agrees with this statement, but places more importance in the fruit and seed characters, and includes other vegetative characters, especially habit and leaflet number, shape, and venation.

HISTORY

Kuntze (Post & Kuntze, 1904) published the genus name *Distictella*, recognizing seven species (but not naming them) and citing in synonymy *Distictis* sensu Bureau (non Meisn.). No description was provided; Bureau's 1864 description of *Distictis* serves as the validating description of *Distictella*. In 1965, Sandwith chose *Distictella mansoana* as the lectotype.

In 1864, Bureau described *Distictis* as having a tomentose and curved capsule, with one valve convex and the other concave. This description was at odds with that of Meisner (1840), who described the capsule of *Distictis* as glabrous and nearly flat. Bureau (1864) also described the new genus *Macrodiscus* Bureau (— *Distictis*) and compared *Distictis* sensu Bureau (— *Distictella*) to *Macrodiscus* (— *Distictis*). *Distictella* (as *Distictis*) was separated from *Distictis* (as *Macrodiscus*) primarily on fruit characters, the capsule of *Distictella* being pubescent (vs. glabrous) and curved with one convex and one concave valve (vs. uncurved) with raised midrib in place of a furrow, replum ends attached to the septum (vs. free), seeds pubescent (vs. glabrous), with relatively longer wings, and seed scars on the septum linear (vs. punctiform) (Bureau, 1864).

Bentham (1876) included both *Macrodiscus* and *Distictis* sensu Bureau in his concept of the genus *Distictis*, in which he identified three groups: (1) *Distictis arthrerion* (Mart.) DC. (— *Arrabidaea arthrerion* (Mart.) Bureau ex K. Schum.); (2) *Distictis mansoana* (DC.) Bureau ex B. Verl. (— *Distictella mansoana*) and *Distictis elongata* (Vahl) Bureau ex Benth. (— *Distictella elongata* (Vahl) Urb.); and (3) a *Macrodiscus* group, *Distictis lactiflora* (Vahl) DC., *Distictis rigescens* (Jacq.) DC. (— *Distictis lactiflora*), and *Bignonia gnaphalantha* A. Rich. (— *Distictis gnaphalantha* (A. Rich.) Greenm.), noting the curved versus uncurved capsules in distinguishing between groups two and three.

Baillon (1891), Schumann (1894), and Bureau and Schumann (1896) recognized and carried on Bureau's misapplication of *Distictis* and *Macrodiscus*. Baillon (1891) treated *Distictella* (as *Distictis*) and *Distictis* (as *Macrodiscus*) as closely related, *Distictella* differing from *Distictis* in having more coriaceous calyces and corollas, and curved fruits. In his concept of *Distictella* he included: *Bignonia arthrerion* Mart. (— *Arrabidaea arthrerion*), *B. elongata* Vahl (— *Distictella elongata*), *B. laurifolia* Vahl (— *Paragonia pyramidata* (Rich.) Bureau; Gentry, 1977), *Pithecoctenium cuneifolium* DC. (— *Distictella cuneifolia*), *B. magnoliifolia* Bureau (ined., possibly referring to *B. magnoliifolia* Kunth — *Distictella magnoliifolia*), *B. mansoana* DC. (— *Distictella mansoana*), and, with question, *B. kerere* Aubl. (— *Mansoa kerere* (Aubl.) A. H. Gentry).

Schumann (1894) separated *Distictis* (as *Macrodiscus*) from *Pithecoctenium*, *Distictella* (as *Distictis*), and other related genera based on floral characters: the membranous to subcoriaceous corolla not curving at a right angle versus coriaceous corolla bent at nearly a right angle. *Distictella* (as *Distictis*) was separated from *Haplolophium* Cham. and *Pithecoctenium* based on its terete stem, which lacks ribs that separate with age, and by its curved fruit. Schumann (1894) treated two species: *Distictis elongata* and *D. mansoana*.

In *Flora Brasiliensis*, Bureau and Schumann (1896) recognized seven species in *Distictis* sensu Bureau: *Distictis mansoana* (— *Distictella mansoana*), *Distictis elongata* (— *Distictella elongata*), *Distictis racemosa* Bureau & K. Schum. (— *Distictella racemosa*), *Distictis guianensis* Klotzsch ex Bureau & K. Schum. (— *Distictella parkeri* (DC.) Sprague & Sandwith), *Distictis granulosa* Bureau & K. Schum. (retained in *Distictis*; Pool, 2007), *Distictis crassa* Bureau & K. Schum. (referred to *Arrabidaea*; Sprague, 1911; Sandwith, 1968), and *Distictis glaziovii* (Bureau ex K. Schum.) Bureau & K. Schum. (— *Haplolophium glaziovii* (Bureau ex K. Schum.) A. H. Gentry). In their key to species, Bureau and Schumann (1896) placed emphasis on the type of inflorescence as well as the presence and arrangement of calyx glandular fields, characters that were found, in this study, to be variable within a species. Bureau and Schumann (1896) also used leaflet shape, base, and pubescence, characters that were also found to be useful in this study.

Urban (1916a) made the combinations in *Distictella* for *Distictis mansoana*, *Distictis guianensis* (— *Distictella parkeri*), *Distictis crassa* (referred to *Arrabidaea*), *Distictis elongata*, *Distictis granulosa* (retained in *Distictis*), *Distictis racemosa*, *Distictis kochii* Pilg. (— *Distictella magnoliifolia*), and *Distictis angustifolia* K. Schum. ex Sprague (— *Distictella racemosa* var. *racemosa*) and published *Distictella broadwayana* (— *Distictella racemosa* var. *translucida*).

Melchior (1927) treated *Distictella* in his subtribe Pithecocteniinae, which also included *Pithecoctenium*, *Neves-armondia* K. Schum. (— *Pithecoctenium*), *Urbanolophium* Melch. (— *Haplolophium*; Gentry, 1992), *Haplolophium*, *Glaziovia* Benth. & Hook. f., and *Amphilophium* Kunth. The subtribe was described as having bifoliolate or trifoliolate leaves; tendrils usually trifid (rarely bifid), or additionally forked, and often with disk-like tips; the calyx thickly coriaceous and densely tomentose, with or without defined lobes; the corolla coriaceous, and, except in *Amphilophium*, densely pubescent, often curved at a right angle and sometimes ± bilabiate; and the capsule oblong-elliptic, flattened, the surface smooth or rough to echinate, and the seed with a membranous wing. *Pithecoctenium* (including *Neves-armondia*) and *Distictella* were placed close together based on their similar pollen and calyces and separated from each other based on the terete (vs. hexangular) stem and curved (vs. not curved) fruit of *Distictella*.

Sampaio (1935) published a key to the species of *Distictella*, as recognized by Urban (1916a), adding the new species *D. campinae* and the new combination *D. rosea* (Kraenzl.) A. Samp. (based on *Distictis rosea* Kraenzl. – *Distictis granulosa* Bureau & K. Schum.; Pool, 2007). Sampaio's (1935) key, following Bureau and Schumann (1896), placed a great deal of emphasis on inflorescence type and number and arrangement of calyx glandular fields, with some lesser emphasis on leaflet shape, base, and pubescence. In 1936, Sampaio and Freire published two new species in *Distictella*, *D. lutescens* C. V. Freire & A. Samp. and *D. negrensis* C. V. Freire & A. Samp. (both treated here as *D. racemosa* var. *racemosa*).

Sprague and Sandwith (1932) published the combination *Distictella parkeri*, placing *Distictis guianensis* in its synonymy. Sandwith went on to make two additional recombinations in *Distictella*, *D. magnoliifolia* (1938b) and *D. cuneifolia* (1953), and published five new species: *D. pulverulenta* Sandwith (Sandwith, 1938c; – *Distictis pulverulenta* (Sandwith) A. H. Gentry), *D. dasytricha* Sandwith (Sandwith, 1953), *D. monophylla* Sandwith and *D. obovata* Sandwith (Sandwith, 1957), and *D. porphyrotricha* Sandwith (1963), and one new variety, *D. monophylla* var. *laevis* Sandwith (Sandwith, 1957; – *Distictella laevis*). Sandwith relied heavily on vegetative characters in defining his new taxa, primarily habit, pubescence, and leaflet shape, size, and venation. He also provided an interesting comparison of *Distictella*, *Pithecoctenium*, and *Anomoctenium* Pichon (– *Distictis*), emphasizing for *Distictella* the terete branchlets with fine ribs that do not separate; simple trichomes; corolla tube lacking glandular fields; nonechinate, pubescent capsule; and seeds with irregular ridges and brown wings (Sandwith, 1965).

Gentry published five new species of *Distictella*: *D. pauciflora* (Gentry, 1974a), *D. arenaria* (Gentry, 1978a), *D. reticulata* (Gentry, 1978b), *D. cremersii* (Gentry, 1980a), and *D. chocoensis* (Gentry, 1980b). His species are again primarily recognized by vegetative characters such as pubescence and leaflet venation and shape, and to a lesser extent by characteristics of the fruit, seed, and inflorescence. Gentry (1976) moved *Distictella pulverulenta* to *Distictis* and provided an interesting discussion about the differences between these two closely related genera.

Gentry (1976) outlined the generic differences between *Distictis* and *Distictella* described by Bureau (1864) and Schumann (1894) and found when species described or transferred to *Distictis* post-Bureau (1864) were examined, the fruit differences did not correspond well with the vegetative and floral characteristics. For example, *Distictis granulosa* Bureau & K. Schum., *D. scabriuscula* (Mart. ex DC.) A. H. Gentry, and *D. steyermarkii* A. H. Gentry all have pubescent capsules (a character of *Distictella*), but the flowers and branchlets of *Distictis* and many species of *Distictella* (such as *D. arenaria*, *D. campinae*, *D. cremersii*, *D. laevis*, *D. monophylla*, *D. obovata*, and *D. porphyrotricha*) have uncurved fruit or even a glabrescent fruit (*D. magnoliifolia*), characteristics previously associated with *Distictis*, but flowers and branchlets of *Distictella*. Gentry (1976) concluded that *Distictis* and *Distictella* were closely related and best separated by vegetative and floral characteristics.

ANATOMY

Santos (1995) studied 31 genera of Bignonieae and divided them into four groups based on the type of cambial variant present. The two varieties of *Distictella racemosa* (as *D. magnoliifolia*) were included in her study. *Distictella* fits into her "group 4," which is characterized by stems with discontinuous phloem wedges intersected with xylem and parenchyma (Santos, 1995: figs. 143, 144). The only other genus in this group is *Pithecoctenium*, which differs from *Distictella* (and the other genera studied) by having secondary xylem in the bark (Santos, 1995). Two other genera in the Pithecocteniinae, *Amphilophium* and *Haplolophium*, as well as *Distictis* (among a number of other genera) fell into her "group 2," having stems with multiples of four phloem wedges in transverse section. The remaining genus in Pithecocteniinae, *Glaziovia*, was not included in her study.

PALYNOLOGY

Gentry and Tomb (1979) included *Distictella racemosa* var. *racemosa* (reported as *D. magnoliifolia*) in their SEM survey of pollen types in the Bignoniaceae (Gentry & Tomb, 1979: fig. 6). From this, they concluded that *Distictella* has inaperturate, coarse-reticulate pollen (Gentry & Tomb, 1979). This is supported by the earlier traditional light microscope work of Gomes (1955) and Sandwith (1965), both of whom examined *D. mansoana* (Gomes, 1955: tab. 1, fig. 4). Urban (1916b) similarly described and illustrated the pollen of *D. racemosa* var. *translucida* (as *D. broadwayana*), but with bulges on the reticulation extending into the areoles (Urban, 1916b: tab. 21, fig. 3). Sandwith (1965: 412) suggested that Urban (1916b) confused the "bulging sinuosities of the walls with outgrowths."

Gentry and Tomb (1979) found this pollen type in a number of other genera, which they suggested could be divided into two natural groups. The one including *Distictella* is characterized by having thick-textured white to purple or red flowers, trifid to multi-trifid tendrils, and multiseriate ovules and seeds. The other genera in the group are *Pithecoctenium* and *Distictis*, genera that Sandwith (1965) and Gentry (1976) had previously suggested as closely related. *Amphilophium*, another genus suggested as closely related (Sandwith, 1965; Gentry, 1974a), had pollen of a different type: stephanocolpate (zonocolpate) with coarse reticulation (Gentry & Tomb, 1979), a pollen type shared with *Glaziovia* and *Haplolophium* (including *Urbanolophium*), all of which are characterized by a frilly outer calyx margin, unique in the family (Gentry & Tomb, 1979).

GENERIC PLACEMENT

Melchior (1927) established the subtribe Pithecocteniinae, which included *Distictella*, *Pithecoctenium*, *Neves-armondia* (= *Pithecoctenium*), *Urbanolophium* (= *Haplolophium*; Gentry, 1992), *Haplolophium*, *Glaziovia*, and *Amphilophium*. *Distictis* was not included in Melchior's concept of the subtribe, perhaps due to its less coriaceous corolla and shape of the capsule valves; the species that would have been considered to be in *Distictis* at that time, *D. lactiflora*, *D. gnaphalantha*, and *D. laxiflora* (DC.) Greenm., all have convex capsule valves that are not at all flattened. However, in other respects, *Distictis* does fit the description of the Pithecocteniinae. The molecular studies of Lohmann (2006) concur, placing all six genera in the Pithecoctenieae clade.

Distictella is probably most closely related to either *Pithecoctenium* or *Distictis*. The three genera share a common pollen type (Gentry & Tomb, 1979) and can be separated from the other members of the Pithecocteniinae by the presence of a simple calyx, without frill. *Distictella* differs from both *Pithecoctenium* and *Distictis* in its terete stem (the stem in *Pithecoctenium* and *Distictis* being hexangular with the ribs often detaching with age), inner surface of the corolla pubescent (vs. glabrous, except in *Distictis pulverulenta*), ovary poorly demarcated from style (vs. clearly demarcated), seed with brown wings (also in *D. pulverulenta* and *D. occidentalis* A. H. Gentry), and, in some species with hyaline seed wings, seeds with minute excrescences on the ridges appearing as dark-colored dots on both body and wing of seed (not known in *Distictis* or *Pithecoctenium*).

Distictella and *Pithecoctenium* both have strongly curved corollas that are nearly always white and always lack glands, have only non-branched trichomes, and share a similar type of cambial variant (Santos, 1995), while *Distictis* has straight to arching corollas that vary in color from white to purple or red and often have glandular fields, often have dendritic trichomes, and have a different type of cambial variant.

Distictis and *Distictella* have non-echinate capsules that have the septa without raised edges and seeds bialate or distinctly transversely oblong, while *Pithecoctenium* has echinate capsules (except for *P. falcatum* (Vell.) A. Pool) that have septa with raised edges and seeds with wings clearly on three sides.

REPRODUCTIVE BIOLOGY

Gentry (1974b, 1980c) recognized 10 major morphological floral types within the Bignoniaceae, each with its own correlating pollination agent(s). Gentry (1974b) characterized the flowers of *Distictella* as falling into the *Pithecoctenium*-type or xylocopid flower. Flowers in this group tend to have calyces that are thick and often glandular; have corollas that are generally strongly bent or curved below the middle, white or cream colored, externally pubescent (above the calyx), and thick (especially at the base), with an internal sturdy ridge of thickened (perhaps glandular) trichomes at the level of the stamen insertion that nearly closes the tube; and produce abundant nectar. Gentry (1990: 122) suggested that *Pithecoctenium*-type flowers are pollinated by the same large and medium-sized bees as typical Bignoniaceae flowers but with the added advantage of the xylocopids being "converted from thieves to legitimate visitors."

Gentry (1974b) identified five different patterns of phenology in the Bignoniaceae. *Distictella* is listed in table 1 (Gentry, 1974b) as type 3 (2) and in table 2 (Gentry, 1974b) as type 2(?). Type 2 applies to steady state species; species that put out one or two flowers over a long period of time and that are probably pollinated by long-lived trap-line bees that follow a regular daily foraging route (Janzen, 1971; Gentry, 1990). There is little or no correlation of flowering time with season (Gentry, 1974b). Type 3 is a cornucopia phenology; large masses of flowers are produced over a period of time lasting from a few weeks to over a month and there is strong correlation with season (Gentry, 1974b). Species in this group have a wide array of pollinators: hummingbirds, hawkmoths, butterflies, and bees (Gentry, 1974b).

Flowers of *Distictella* are very uniform from species to species, and generally fit the *Pithecoctenium*-type, though often with a thinner corolla and with the base of the tube less markedly blocked by glandular trichomes or papillae than *Pithecoctenium*. In a few species, the calyx is also membranous (*D. laevis*, *D. monophylla*, and *D. obovata*). *Distictella pauciflora*, known only from the type, differs from other species in its depauperate inflorescence and purple flowers (purple flowers are also frequent in *D. monophylla* and infrequent in *D. mansoana* and *D. racemosa* var. *translucida*). Most of the species have terminal (or terminal and lateral), elongate racemes or racemose panicles, 10–40 cm long with 10 to 34 flowers, but with only 1 to 3 flowers open at any one time. A few species (*D. campinae*, *D. laevis*, and *D. monophylla*) tend to have smaller inflorescences, but (except sometimes *D. monophylla*) produce several flowers that bloom over a period of time.

Phenology patterns are difficult to determine from a herbarium study, particularly for species where little or no flowering material is known (*Distictella cremersii*, *D. pauciflora*, *D. reticulata*, and *D. dasytricha*). *Distictella racemosa* var. *translucida*, *D. racemosa* var. *racemosa*, and *D. mansoana* flower nearly throughout the year over their entire range. For purposes of comparison, flowering times were compared only for the areas where most flowering collections were made: Peru for *D. racemosa* var. *translucida*; Amazonas, Brazil, for *D. racemosa* var. *racemosa*; and Minas Gerais, Goiás, and Distrito Federal, Brazil, for *D. mansoana*. Flowering for five species of *Distictella* (*D. arenaria*, *D. chocoensis*, *D. laevis*, *D. magnoliifolia*, and *D. monophylla*) does not appear to correlate with seasonality. All of these, except *D. chocoensis*, are found in white sand savannas or shrubby areas. Seven taxa of *Distictella* (*D. lohmanniae* A. Pool, *D. obovata*, *D. parkeri*, *D. cuneifolia*, *D. elongata*, *D. mansoana*, and *D. racemosa* var. *translucida*) flower primarily during the rainy season. Three taxa (*D. campinae*, *D. porphyrotricha*, and *D. racemosa* var. *racemosa*) flower primarily during the dry season or at a time of relatively less rainfall. No apparent correlations were found between wet or dry flowering seasons and soil type, vegetation type, inundation, or elevation.

Most of the species of *Distictella* have seed wings that are well developed, membranous and hyaline (at least at the tips). However, three taxa (*D. cremersii*, *D. campinae*, and *D. racemosa* var. *racemosa*) have seed wings somewhat to greatly reduced, subcoriaceous, and opaque. *Distictella cremersii* is known from riparian or seasonally inundated forests and *D. racemosa* var. *racemosa* is found in seasonally inundated forests, and it is assumed that the reduction in the wings is an evolutionary adaptation toward water dispersal. However, *D. campinae* is probably not associated with a water habitat (according to label data, except for *A. H. Gentry & A. Pinheira 13130*, varzea edge), and *D. cuneifolia*, from seasonally inundated savannas, *D. reticulata*, from forests along riversides, and *D. dasytricha*, from swampy forested areas, have well-developed, membranous, and hyaline seed wings.

DISTRIBUTION

Distictella is found only in tropical South America with one species also found on Tobago. Some of the species are found primarily in areas of white sand: *D. arenaria*, *D. campinae*, *D. cremersii*, *D. elongata*, *D. laevis*, *D. magnoliifolia*, *D. monophylla*, and *D. parkeri*. Three taxa are found in seasonally inundated areas: *D. cuneifolia*, *D. dasytricha*, and *D. racemosa* var. *racemosa*, and two others, *D. cremersii* and *D. reticulata*, are found on the margin of rivers. Many species are found primarily in savannas or areas with scrubby vegetation (campinas, cerrados, or pampas): *D. arenaria*, *D. campinae*, *D. cuneifolia*, *D. laevis*, *D. magnoliifolia*, *D. mansoana*, *D. monophylla*, and *D. obovata*, while the rest are found in forest. *Distictella cuneifolia* is often found in areas with an abundance of termite mounds. Most of the species of *Distictella* are found below 400 m elevation. Exceptions to this are *D. arenaria* (100–700 m), *D. mansoana* (160–1400 m, usually over 400 m), *D. monophylla* (100–1500 m), *D. obovata* (450–1600 m), *D. porphyrotricha* (900–1380 m), and *D. racemosa* var. *translucida* (100–950 m).

Most of the taxa of *Distictella* are known from limited areas, while three, *D. mansoana*, *D. racemosa* var. *racemosa*, and *D. racemosa* var. *translucida*, have much broader ranges. *Distictella mansoana* has the most southern range. It is found primarily in south-central Brazil, northern Bolivia, and southern Peru, with a few collections found in northern and central Amazonian Brazil (Fig. 1B). *Distictella racemosa* var. *racemosa* is found from northern central Amazon and the Guianas to western southern Amazon (Fig. 2B). *Distictella racemosa* var. *translucida* is found in Tobago and distributed in a western arc from the Guianas through Venezuela, Colombia, Ecuador, and Peru, and peripherally in Brazil (Fig. 2B). The three may overlap in northeastern Bolivia and central-western Brazil, but *D. mansoana* is usually found in savannas (usually described as pampas or cerrados) at higher elevations while the other two are found in forests, often at lower elevations. *Distictella racemosa* var. *racemosa* and *D. racemosa* var. *translucida* have peripherally overlapping distributions, but *D. racemosa* var. *racemosa* is found in seasonally inundated areas, while *D. racemosa* var. *translucida* is found in non-inundated areas. *Distictella cuneifolia* is found along the northern border of Bolivia with Brazil (Fig. 1A), where it may overlap with the three taxa mentioned above, but it is found in savannas or pampas, usually at lower elevations.

Several species are primarily located in central to southern Amazon (*Distictella lohmanniae*, *D. reticulata*, *D. campinae*, *D. laevis* [also southeast Vene-

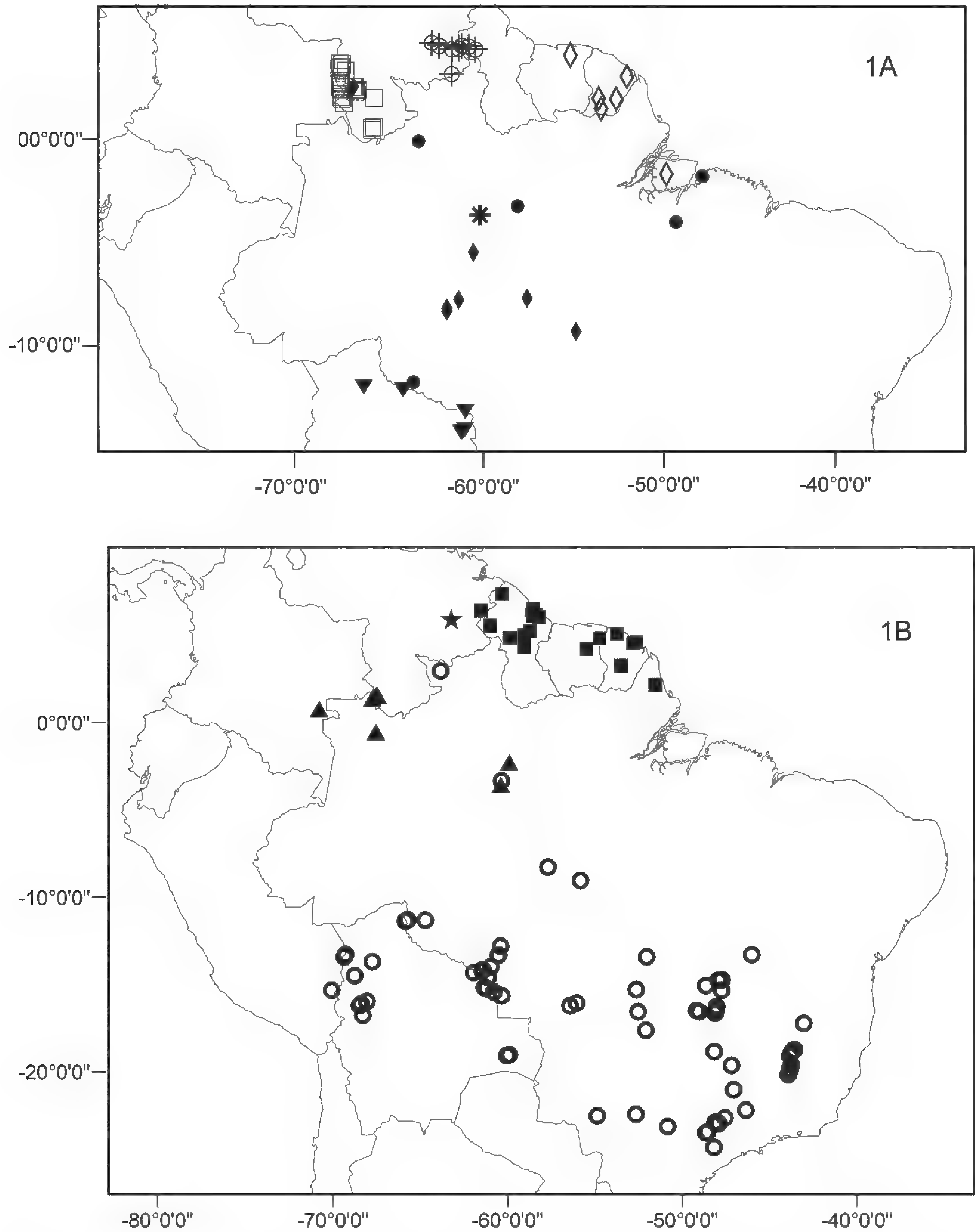

Figure 1. Distribution of selected species of *Distictella*. —A. *D. campinae* A. Samp. (●), *D. cremersii* A. H. Gentry (◊), *D. cuneifolia* (DC.) Sandwith (▼), *D. laevis* (Sandwith) A. H. Gentry (♦), *D. monophylla* Sandwith (□), *D. obovata* Sandwith (⊕), and *D. reticulata* A. H. Gentry (✱). —B. *D. magnoliifolia* (Kunth) Sandwith (▲), *D. mansoana* (DC.) Urb. (O), *D. parkeri* (DC.) Sprague & Sandwith (■), and *D. pauciflora* A. H. Gentry (★).

zuela], and *D. elongata* [also Guianas]) where they overlap with *D. mansoana* and *D. racemosa* var. *racemosa*. *Distictella mansoana* is the only one of these to usually be found above 400 m elevation. *Distictella campinae* and *D. laevis* (Fig. 1A) are both found in white sand savannas or campinas, but the present distribution suggests that the two species are isolated from each other. *Distictella magnoliifolia* (Fig. 1B), found primarily along the southern border of Venezuela with Colombia, has also been collected in

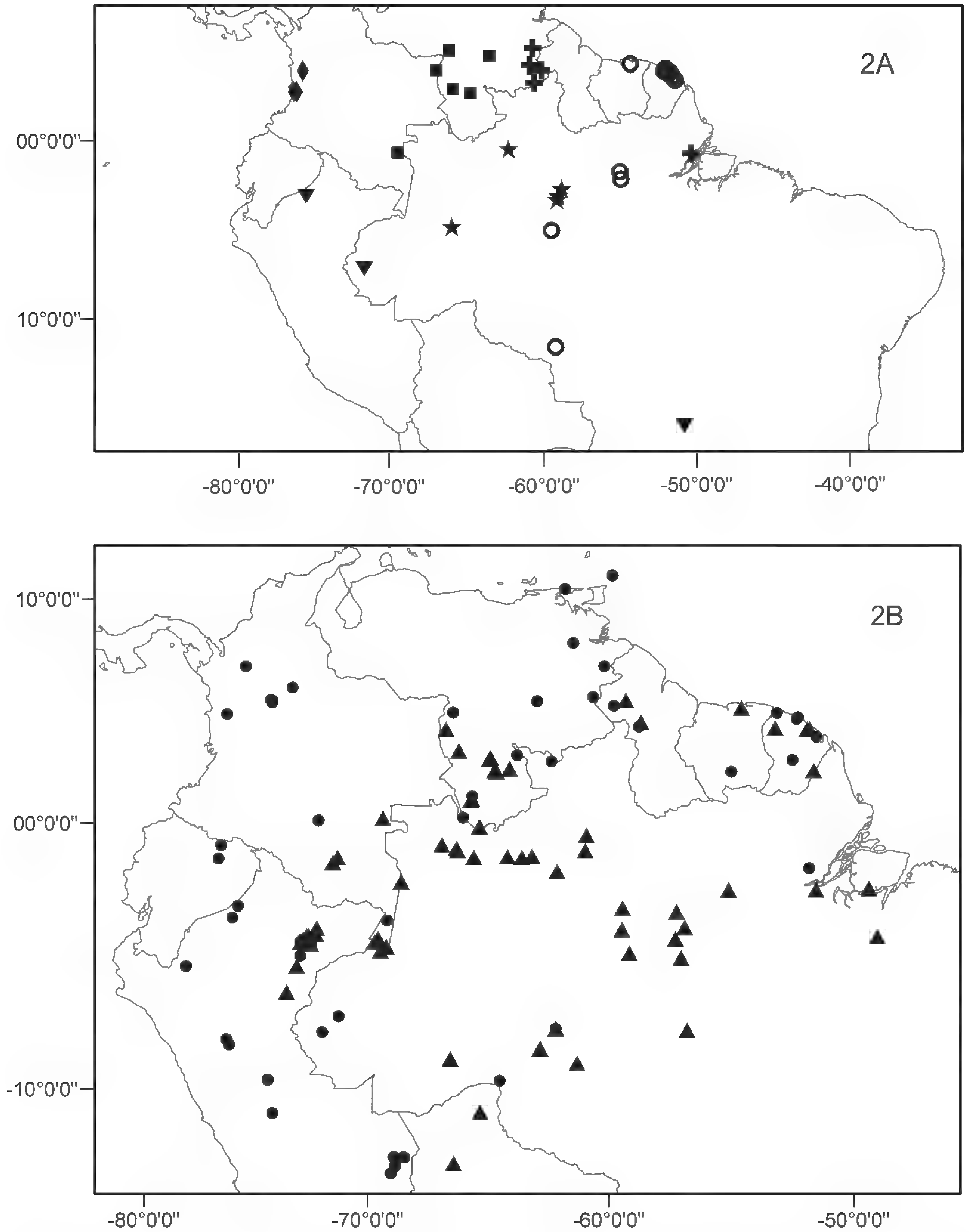

Figure 2. Distribution of selected species of *Distictella*. —A. *D. arenaria* A. H. Gentry (■), *D. chocoensis* A. H. Gentry (⧫), *D. dasytricha* Sandwith (▼), *D. elongata* (Vahl) Urb. (○), *D. lohmanniae* A. Pool (★), and *D. porphyrotricha* Sandwith (✚). —B. *D. racemosa* (Bureau & K. Schum.) Urb. var. *racemosa* (▲) and *D. racemosa* var. *translucida* A. Pool (●).

Amazonas, Brazil, where it is known from similar habitats as *D. campinae* and *D. laevis*. *Distictella elongata* (Fig. 2A) is unique in this group to white sand forests and *D. racemosa* var. *racemosa* is unique to inundated non-white sand areas. Both *D. lohmanniae* (Fig. 2A) and *D. reticulata* (Fig. 1A) are found in non-inundated forests, apparently not associated with white sand, at low elevations.

A number of species are found in northeastern Venezuela and/or the Guianas: *Distictella porphyrotricha* (also north-Atlantic Brazil; Fig. 2A), *D. elongata* (also Brazil), *D. obovata* (Fig. 1A), *D. parkeri* (also Amapá, Brazil; Fig. 1B), *D. pauciflora* (Fig. 1B), and *D. cremersii* (also Ilha de Marajó, Pará, Brazil; Fig. 1A) where they overlap with the widespread varieties of *D. racemosa*. Of these, only *D. obovata* and *D. racemosa* var. *translucida* are found at elevations over 500 m. *Distictella obovata* is often found in the savannas of the Pakaraima Mountains of Guyana and Gran Sabana of Venezuela, while *D. racemosa* var. *translucida* is found widespread in lowland and montane forests. Neither are associated with white sand. *Distictella parkeri*, *D. elongata*, and *D. cremersii* are found primarily in white sand forests, *D. cremersii* in riparian vegetation, probably on a peneplain of a crystalline base (Granville, 1988), *D. elongata* often in former sea beaches near the coast (in the Guianas; Granville, 1988), and *D. parkeri* often in low or disturbed forests, probably associated with schist, conglomerate, and quartzite of the Orapu-Bonidoro series (Granville, 1988). *Distictella racemosa* var. *racemosa* is known from seasonally inundated forests, and *D. porphyrotricha* and *D. racemosa* var. *translucida* are both found in non-inundated forests. The latter two might be separated by phenology, *D. porphyrotricha* flowers in the dry season and *D. racemosa* var. *translucida* in the wet season. *Distictella pauciflora* is known from only one collection.

Two species are found only in southwestern Venezuela, or southwestern Venezuela and eastern Colombia: *Distictella monophylla* (Fig. 1A) and *D. arenaria* (Fig. 2A), where they overlap with the more widely distributed *D. laevis*, *D. magnoliifolia*, *D. racemosa* var. *racemosa*, and *D. racemosa* var. *translucida*. *Distictella laevis*, *D. monophylla*, *D. magnoliifolia*, and *D. arenaria* are all known from non-seasonally inundated, white sand savannas, or campinas, and show no seasonality in flowering. *Distictella laevis* and *D. magnoliifolia* have not been found above 400 m, while *D. arenaria* ranges from 100–700 m elevation and *D. monophylla* ranges from 100–1500 m elevation.

Distictella chocoensis (Fig. 2A) is the only species of *Distictella* known from the Chocó and Valle del Cauca departments of western Colombia, where it is endemic.

I have only seen five collections of *Distictella dasytricha*. Three are from the western central Amazon of Peru and Brazil and two from Goiás (Fig. 2A). It grows in swampy forests below 500 m elevation. Its distribution pattern is not clear from the collections seen, but appears to overlap with *D. racemosa* var. *racemosa*, which is also found in inundated forests at low elevations, *D. racemosa* var. *translucida*, found in forests not seasonally inundated, and *D. mansoana*, generally found at higher elevations in non-inundated non-forest habitats.

ECONOMIC AND ETHNOBOTANICAL USE

I have found only one mention of use for *Distictella*. Schultes (1970) reported the use of *Distictella racemosa* as an ingredient in a type of curare made by the Barasana Indians living on the Río Apaporis, Colombia. The root is reported to be very toxic.

MATERIALS AND METHODS

All specimens examined by Gentry and as part of this study have been incorporated into the Missouri Botanical Garden database-management system Tropicos (<http://www.tropicos.org/>), which now contains label information for all *Distictella* specimens housed at MO in addition to those received on loan from: AAU, B, BM, BR, C, CAS, CM, F, FTG, G, GH, GOET, K, L, M, MICH, NY, RB, S, TEX, U, UPS, US, and W. Specimens determined by this author were selected from this database to generate the distribution maps and the Index to Numbered Exsiccatae (Appendix 1), the former with the assistance of Duan Bills. Geographic coordinates, when not stated on labels, were estimated using the Internet sites: <http://earth-info.nga.mil/gns/html/index.html> and <http://www.fallingrain.com/world/>, and wet and dry season designations were made based on Brawer (1991). Habitat descriptions are those of the plant collectors as indicated on herbarium labels.

TAXONOMIC TREATMENT

Distictella Kuntze in T. Post & Kuntze, Lex. Gen. Phan. 182. 1904 [1903]. TYPE: *Distictella mansoana* (DC.) Urb. (lectotype, designated by Sandwith, 1965: 412).

Lianas or rarely shrubs; branchlets terete, without interpetiolar glandular fields; pseudostipules usually inconspicuous, short and thick. Leaves usually bifoliolate with a terminal trifid tendril present or absent, or rarely unifoliolate or trifoliolate. Inflorescence a terminal or lateral raceme or racemose panicle; calyx campanulate, truncate, sometimes with minute denticules, usually with glandular fields below the apical margin; corolla usually white with yellow throat (sometimes purple), infundibular (rarely campanulate) from a cylindric, glabrous base, strongly curving 1/5–1/2 length from base, externally densely minutely pubescent above cylindric base, internally usually densely minutely pubescent (rarely nearly glabrous, sometimes also lepidote) above cylindric base, and usually with clusters of trichomes at bases of stamens and staminode; stamens 4, inserted at approximately the same level in the corolla tube, dithecal, the thecae divaricate, glabrous, small staminode inserted at approximately the same level as the stamens; disc annular-pulvinate; ovary oblong, sericeous with minute appressed trichomes, sometimes with a narrow stipe, ovules 4- to 8-seriate in each locule, style pubescent to apex, poorly demarcated from ovary. Capsule oblong, elliptic, or weakly spatulate, woody, non-echinate, both valves convex, one valve convex and the other concave resulting in a curved fruit, or both valves slightly to strongly compressed, septum parallel to valves, without raised edges; seeds bialate, shades of brown, with irregular ridges (often appearing with irregular dark-colored dots) on both wing and body, glabrous, wings well to poorly demarcated from seed body, sometimes greatly reduced, often thin, hyaline to opaque.

KEY TO SPECIES OF *DISTICTELLA*

1a. Leaves unifoliolate, or bifoliolate and petiolules absent to 2 mm long.

2a. Unifoliolate, abaxial surface of leaflets densely pubescent with small trichomes and with the tertiary and higher order venation conspicuous and strongly raised, forming a fine, closed network . . . . 12. *D. monophylla*

2b. Unifoliolate and/or bifoliolate, abaxial surface of leaflets without trichomes (or with trichomes at base of midrib) and with the tertiary and higher order venation flat or immersed, inconspicuous and loosely open-reticulate.

3a. Lateral veins initiating at a 70°–90° angle with the midrib, extending in a nearly straight line toward margin, before looping to meet next lateral vein, strongly brochidodromous; seeds 7–8 × 11–12 mm, wings greatly reduced, subcoriaceous and opaque . . . . 2. *D. campinae*

3b. Lateral veins initiating at a 45° angle with the midrib, curving toward apex before anastomosing with tertiary veins, or weakly brochidodromous; seeds 10–14 × 25–28 mm, wings well developed, membranous and hyaline . . . . 8. *D. laevis*

1b. Leaves bifoliolate with petiolules 4 mm long or longer.

4a. Abaxial surface of leaflets without trichomes or with trichomes restricted to axils of lateral veins with midrib and sometimes also along midrib.

5a. Inflorescence greatly reduced, type with one terminal flower and one flower from axil of uppermost leaf . . . . 15. *D. pauciflora*

5b. Inflorescence a raceme or racemose panicle.

6a. Low lianas or scandent shrubs; leaflets 4.7–11.5 × 1.6–5 cm; fruits 5–6.7 cm long; found in savannas, campinas, or pampas.

7a. Lateral veins initiating at a 70°–90° angle with the midrib, extending in a nearly straight line toward margin, before looping to meet next lateral vein, strongly brochidodromous; seeds 11–12 mm wide, wings greatly reduced, subcoriaceous and opaque; endemic to Amazonian Brazil, where it is found in savannas or campinas, on white sand . . . . 2. *D. campinae*

7b. Lateral veins initiating at a 45°(60°) angle with the midrib, curving toward apex before anastomosing with tertiary veins, or weakly brochidodromous; seeds 26–28 mm wide, wings well developed, membranous and hyaline; endemic to Bolivia, where it is found in savannas or pampas, on black, silty soils . . . . 5. *D. cuneifolia*

6b. Lianas; leaflets 8–24 × 3.3–12.5 cm; fruits 7–22 cm long; found in forests, or *D. magnoliifolia* found in scrubby or low forests or savannas.

8a. Leaflets coriaceous with 2 to 4 pairs of lateral veins, tertiary veins raised on both surfaces; fruit drying black, nearly without trichomes, narrowly oblong, 2–2.5 cm wide, apex long attenuate, wall 1–2 mm thick; growing in scrubby or low forests or savanna . . . . 10. *D. magnoliifolia*

8b. Leaflets chartaceous to subcoriaceous with 4 to 9 pairs of lateral veins, tertiary veins flat to immersed on both surfaces; fruit drying yellowish green, greenish gold, golden brown, or reddish brown, densely pubescent, broadly elliptic to oblong or oblanceolate, 3.5–7 cm wide, apex acute, obtuse, rounded, or obtuse and apiculate, wall 3–5 mm thick; growing in forests.

9a. Fruits usually curved with one valve concave and the other convex; seeds 2.5–4.5 times as wide as long, wings membranous and hyaline; growing in non-inundated areas . . . . 17b. *D. racemosa* var. *translucida*

9b. Fruits not curved, valves convex or slightly compressed; seeds less than 2 times as wide as long, wings subcoriaceous to coriaceous and opaque; growing in seasonally inundated areas or riparian habitats.

10a. Abaxial surface of leaflets with clusters of trichomes in the axils of the lateral veins with the midrib, glandular fields absent; seeds 14–16 × 12–20 mm, wings nearly totally reduced, reddish brown or reddish black; endemic to the Guianas and Ilha de Marajó, Pará, Brazil . . . . 4. *D. cremersii*

10b. Abaxial surface of leaflets without trichomes, usually with glandular fields at the apex and in the axils of the basal lateral veins with the midrib; seeds 15–28 × 24–45 mm, wings developed, brown or gray; widespread throughout greater Amazonian South America . . . . 17a. *D. racemosa* var. *racemosa*

4b. Abaxial surface of leaflets pubescent over entire surface.

11a. Longest trichomes of branchlets and petioles 1–2 mm long.

12a. Adaxial surface of leaflets flat, lateral veins initiating at a 20° angle with midrib, higher order venation forming a very fine, closed network; trichomes of branchlets, petioles, petiolules, and inflorescence golden in color; bracteoles lost prior to anthesis; fruit curved with obtuse to rounded apex and prominent midrib; found in swampy areas below 500 m . . . . 6. *D. dasytricha*

12b. Adaxial surface of leaflets bullate, lateral veins initiating at a 45° angle with midrib, higher order venation forming a loosely closed network; trichomes of branchlets, petioles, petiolules, and inflorescence ferruginous; bracteoles persistent in flower; fruit not curved, with acuminate apex and without a prominent midrib; found in terra firme forests between 900 and 1400 m . . . . 16. *D. porphyrotricha*

11b. Longest trichomes of branchlets and petioles 0.03–0.7 mm long.

13a. Tertiary veins immersed to flat on abaxial surface of leaflet.

14a. Leaflets drying bicolored, the adaxial surface blackish green, abaxial surface covered with appressed trichomes to 0.03 mm long, lateral veins initiating at a 20° angle with midrib, tertiary veins generally parallel, closely set, and non-branching; capsule slightly curved with prominent midrib; seed with wings well demarcated from seed body; found in terra firme forests, Amazonas, Brazil . . . . 9. *D. lohmanniae*

14b. Leaflets drying a similar color on both surfaces, + brownish green, abaxial surface tomentose with trichomes to 0.15–0.2 mm long, lateral veins initiating at a 45° angle with midrib, tertiary veins generally branching, not conspicuously closely set, and parallel; capsule strongly curved with midrib, not at all evident to subevident; seed with wings poorly demarcated from seed body; found primarily in white sand forests, the Guianas, Bolívar, Venezuela, and Amapá, Brazil . . . . 14. *D. parkeri*

13b. Tertiary veins raised on abaxial surface of leaflet.

15a. Leaflets obovate or oblanceolate (rarely elliptic) with the base cuneate or shortly attenuate; capsule with an acuminate apex.

16a. Leaflets chartaceous to subcoriaceous with a flat margin, lateral veins initiating at a 20° angle with midrib, adaxial surface not drying glossy; inflorescence paniculate; fruit curving with one valve convex and the other concave, drying golden brown with prominent midrib; found between 0 and 200 m in French Guiana, Suriname, and Brazil . . . . 7. *D. elongata*

16b. Leaflets rigidly coriaceous with a recurved margin, lateral veins initiating at a 45° angle with midrib, adaxial surface drying glossy; inflorescence a raceme; fruit not curving, both valves somewhat compressed, drying dull black with midrib subevident; found between 450 and 1660 m in the region of the Pakaraima Mountains of Guyana and adjacent Bolívar, Venezuela . . . . 13. *D. obovata*

15b. Leaflets ovate, lanceolate, or elliptic with the base rounded to cordate (sometimes + acute in *D. mansoana*); capsule with apex acute or obtuse (not known in *D. chocoensis*).

17a. Abaxial surface of leaflets with tertiary and higher order venation similarly raised . . . . 18. *D. reticulata*

17b. Abaxial surface of leaflets with tertiary veins more raised than higher order venation.

18a. Tertiary and higher order venation inconspicuous and usually raised on adaxial surface, usually inconspicuous and always raised on abaxial surface forming a loosely closed network; pseudostipules narrow (width 1/5–1/3 length), rarely present; fruit curving with a prominent midrib; seeds with wings well demarcated from seed body; known from Brazil, Bolivia, and Peru . . . . 11. *D. mansoana*

18b. Tertiary and higher order venation immersed in adaxial surface, conspicuous and raised on abaxial surface forming a medium to fine closed network; pseudostipules broad (width 1/2 to equal length), often present; fruit not curving, midrib not evident or subevident (not known in *D. chocoensis*); seeds with wings poorly demarcated from seed body (not known in *D. chocoensis*); known from Venezuela and Colombia.

19a. Petiolules longer than petioles; tertiary veins branching; often growing on white sand in disturbed areas, known from southern Venezuela and eastern Colombia . . . . 1. *D. arenaria*

19b. Petiolules shorter than petioles; tertiary veins not branching; known from wet forests of western Colombia . . . . 3. *D. chocoensis*

1. Distictella arenaria A. H. Gentry, Mem. New York Bot. Gard. 29: 273. 1978. TYPE: Venezuela. Amazonas: 18 km S of Samariapo toward Río Sipapo, 125 m, 29 June 1975, *A. H. Gentry & P. Berry 14615* (holotype, MO!; isotype, NY not seen, digitized image!, VEN not seen).

Liana; young branchlets terete, drying dull brown or black, usually solid, lepidote, pilose or puberulent or with erect or ascending trichomes; trichomes white, tan, or ferruginous, 0.1–0.7 mm; pseudostipules usually present, asymmetrically orbicular or broadly ovate, thick, 3–10 × 3–5 mm, the tip usually curving strongly downward. Leaves bifoliolate, trifid tendril sometimes present; petiole 5–15 mm, with pubescence like that of branchlets; petiolules 8–27 mm, with pubescence like that of branchlets; leaflets lanceolate or ovate, 7–19 × 4.4–11.5 cm, chartaceous to subcoriaceous, 4 or 5 pairs of lateral veins, each lateral vein initiating at a 45°–60° angle with the midrib and gradually curving upward toward margin and anastomosing with tertiary veins, tertiary veins conspicuous, anastomosing with higher order venation to form a fine, closed network, all veins immersed adaxially and raised abaxially, both surfaces drying yellow-green or olive, adaxial surface with midrib, and often lateral veins, pubescent, inconspicuously but abundantly lepidote, with or without scattered glands, abaxial surface pilose or with erect to spreading, white trichomes, 0.1–0.3 mm, abundantly lepidote, usually with fields of glands in most of the axils of the lateral veins with the midrib, margin flat, base cordate, subcordate, or rounded, apex acute or obtuse with tip cuspidate or apiculate. Inflorescence a raceme (rarely racemose panicle), peduncle with rachis 9.5–23 cm with 10 to 27 flowers, peduncle ca. 3 mm wide at base, peduncle, rachis, and pedicels drying reddish brown, with pubescence like that of branchlets or minutely puberulent, lepidote, bracteoles absent or not seen; calyx 8–10 × 8–10 mm, subcoriaceous, with minute, appressed, ferruginous trichomes and densely lepidote, glandular fields 2 or 2.5 pairs; corolla white with yellow throat, infundibular from cylindric base, curved 1/3 distance from base, 4.5–5.5 cm, chartaceous, tube 3.2–4.2 cm with cylindric base 9–12 mm long and mouth 14–15 mm wide, externally and internally pubescent with minute trichomes above glabrous base, internally with clusters of glandular papillae or villous at bases of stamens and staminode, lobes 11–15 × 11–12 mm; stamens and staminode inserted 9–10 mm from base of corolla tube, anthers 4–4.5 mm, longer filaments 24–28 mm, shorter filaments 18–25 mm, staminode ca. 4 mm; disc ca. 1 × 3.5–5 mm; pistil 3.4–4 cm, ovary 3.5–5 × 2–2.5 mm, stipe 0.5–1.5 mm, stigma lanceolate. Capsule oblong, not curved, 7.5–11 × 2.5–3 cm, ca. 0.3 cm diam., base acute and truncate, apex acute, valves fairly strongly compressed, drying reddish or golden brown, puberulent with minute, white or ferruginous trichomes, glandular and warty, midrib subevident or not at all evident, wall ca. 2 mm thick. Seeds 10–18 × 32–55 mm, wings poorly demarcated from seed body, reddish brown with tips lighter brown, membranous, hyaline, especially at tips, the veins contrasting in color to surface.

Distribution. *Distictella arenaria* is known from southern Venezuela (Bolívar and Amazonas) and eastern Colombia (Vaupés and Vichada). It has been reported from thickets on white sand, shrubby islands in savanna, and road and stream sides, at elevations ranging from 100 to 700 m. Figure 2A.

Phenology. Flowering June, December, and January; fruiting November and March.

Discussion. *Distictella arenaria* is most similar to *D. mansoana* and *D. chocoensis*. *Distictella mansoana* differs from *D. arenaria* in having narrow (3–7 × 1–1.5 mm), early caducous pseudostipules, leaflets with the tertiary veins usually raised on the adaxial surface, petioles usually longer than petiolules (vs. petiolules usually longer than petioles), capsule much thicker (1.2–2.5 cm diam.) with a prominent midrib, and seeds with wings well demarcated from seed body. *Distictella chocoensis* differs from *D. arenaria* in having the petioles longer than the petiolules, tertiary veins not branching, and ovaries without a stipe. The last character may not be reliable, as few flowering specimens of either species are available. Fruiting material of *D. chocoensis* is not known. *Distictella arenaria* is also separated by geography and habitat from *D. chocoensis*, which is endemic to the wet forests of Chocó and Valle del Cauca, Colombia, and by geography from *D. mansoana* of Brazil, Bolivia, and southern Peru.

Additional specimens examined. COLOMBIA. **Vaupés:** Río Piraparaná, environs of Catholic mission of San Miguel, Cañon Colorado, *E. W. Davis 140-a* (MO). **Vichada:** Parque Nac. Nat. El Tuparro, ca. 10 km SW of Centro Administrativo on rd. to El Tapón (due S of Cerro Peinilla), *J. L. Zarucchi & C. E. Barbosa 3437-a* (MO). VENEZUELA. **Amazonas:** Canaripo, lado sur del río Ventuari, *J. A. Steyermark & P. Redmond 112819* (MO); 18 km S of Samariapo toward Río Sipapo, *A. H. Gentry & P. Berry 14618* (MO); 0–3 km from Río Sipapo, 29–32 km S of Samariapo, *A. H. Gentry & P. Berry 14633* (MO); rd. from San Fernando de Atabapo to Santa Barbara, 12–40 km from San Fernando, *A. H. Gentry & S. Tillett 10874* (MO); Dpto. de Atures, Caño Morrocoy, vía Puerto Sipapo, *A. Castillo et al. 3502* (MO); Dpto. Atabapo, Cerro Huachamacarí, E slope, *R. Liesner 25720* (MO), *25767* (MO). **Bolívar:** Río Caura, arriba del Salto Para, en las isles 2–3 km arriba del camp, Las Pavas, *J. A. Steyermark et al. 113086* (MO).

2. **Distictella campinae** A. Samp., Ann. Acad. Brasil. Sci. 7: 120. 1935. TYPE: Brazil. Pará: near Vigia, 26 June 1926, as "21 June 1927," *A. Ducke s.n. (RB 22688)* (holotype, RB!; isotype, MO!).

Low liana or scandent shrub to 1 m; young branchlets terete, drying dull yellowish brown or black, solid, lepidote, pubescent or glabrescent; trichomes colorless or ferruginous to ca. 0.5 mm; pseudostipules caducous, clavate, thick, 1–3 × 0.4–1 mm. Leaves bifoliolate, or sometimes first pair of leaves on branchlet unifoliolate, trifid tendril present (rarely residual to 1 mm long) or absent; petiole 4–12 mm, with trichomes like those of branchlets; petiolules (1)3–7 mm, with trichomes like those of branchlets; leaflets elliptic (rarely spatulate), 5.2–

11.5 × 1.6–5 cm, coriaceous, (7)8(9) pairs of lateral veins, each lateral vein initiating at a 70°–90° angle with the midrib and extending in a nearly straight line toward margin before looping to meet next lateral vein, strongly brochidodromous, tertiary veins inconspicuous, loosely open-reticulate, all veins immersed adaxially, midrib raised abaxially, and other veins immersed to flat (lateral veins sometimes slightly raised), both surfaces drying pale gray-green, adaxial surface without trichomes, abundantly lepidote, sometimes with scattered glands, abaxial surface without trichomes, abundantly lepidote, often with glandular fields at base and sometimes at apex or glands scattered, margin flat (rarely slightly revolute), base rounded, or cuneate and then rounded, apex acute. Inflorescence a raceme or racemose panicle, peduncle with rachis 3–13 cm with 5 to 11 flowers, peduncle 1–2.5 mm wide at base, peduncle, rachis, and pedicels drying dull yellowish brown or grayish brown, pubescent with trichomes like those of branchlets, bracteoles ca. 1.75 × 0.5 mm, usually lost before anthesis; calyx 7–10 × 8–9 mm, membranous or subcoriaceous, pubescent with minute red or colorless trichomes tightly appressed, glandular fields 1.5 to 2 pairs; corolla white, infundibular from cylindric base, curved 1/3–1/2 distance from base, 5.5–6.5 cm, membranous, tube 4–4.2 cm with cylindric base 10–11 mm long and mouth 13–18 mm wide, externally densely puberulent with minute trichomes above glabrous base, internally puberulent and lepidote, with villous clusters of trichomes at bases of stamens and staminode, lobes 15–20 × 15–23 mm; stamens and staminode inserted 9–11 mm from base of corolla tube, anthers 3–4.2 mm, longer filaments 18–19 mm, shorter filaments 15.5–17 mm, staminode 2–3 mm; disc 1–1.5 × ca. 3.5 mm; pistil 3.3–3.5 cm, ovary ca. 3 × 1.3–1.5 mm, stipe 0.5–2 mm, stigma lanceolate. Capsule elliptic, not curved, ca. 5 × 2.2 cm, ca. 0.4 cm diam., base acute, apex obtuse or truncate, valves compressed, drying brown, densely pubescent with minute, appressed, dull white trichomes, glands scattered, midrib not evident, wall ca. 2.2 mm thick. Seeds 7–8 × 11–12 mm, wings greatly reduced and poorly demarcated from seed body, reddish brown, subcoriaceous, opaque, the veins not contrasting in color to surface.

Distribution. *Distictella campinae* is known from the Brazilian states of Amazonas and Pará with one collection from Rondônia. It is often found growing in white sand savanna or campinas, between 50 and 100 m. Figure 1A.

Phenology. Flowering March, August, September, and December; fruiting March.

Discussion. Sandwith (1962) treated *Distictella campinae* as a synonym of *D. cuneifolia*. *Distictella campinae* is very similar to both *D. cuneifolia* and bifoliolate specimens of *D. laevis*. However, the lateral veins in the leaflets of *D. cuneifolia* and *D. laevis* are initiated at about a 45° angle before curving toward the apex and finally anastomosing with the higher order venation. They also differ markedly in the seeds; the wings are hyaline, well developed (seeds 9–14 × 25–28 mm), and well demarcated from the seed body in *D. cuneifolia* and *D. laevis*. *Distictella campinae* and *D. laevis* have similar geographic distributions and are found in similar habitats, but *D. cuneifolia* is endemic to Bolivia, where it is found in savannas or pampas with black silty soils, which are often described as seasonally inundated, or with numerous termite mounds.

Selected specimens examined. BRAZIL. **Amazonas:** Rio Uatumã, Mun. de Itapiranga, próximo à cachoeira do Tucumarí, *C. A. Cid Ferreira et al. 497* (MO). **Pará:** 10 km E of Portel, *G. T. Prance et al. 1291* (MO); Mun. de Vigia, 36 km SE of Vigia, along hwy. PA-140 to Belém, *G. Davidse et al. 17568* (MO). **Rondônia:** Mun. Costa Marques, BR-429, 123 km de Costa Marques, entrando 06 km num vicinal de margem esquerda, na Faz., Três Irmãos, *C. A. Cid Ferreira et al. 8664* (MO).

3. **Distictella chocoensis** A. H. Gentry, Phytologia 47: 100. 1980. TYPE: Colombia. Chocó: ca. 10 km W of Istmo de San Pablo on PanAmerican Hwy., W of Las Animas, 110 m, 12 Jan. 1979, *A. H. Gentry & E. Renteria A. 24089* (holotype, COL not seen; isotype, MO!).

Liana; young branchlets terete, sometimes flattened at nodes, drying dull brown or reddish brown, solid, lepidote, pilose with tangled, ferruginous trichomes, ca. 0.3 mm long or puberulent with erect or ascending, ferruginous trichomes, 0.05–0.3 mm; pseudostipules often present, oblong, thick, 4–7 × 2–4 mm. Leaves bifoliolate, trifid tendril sometimes present; petiole 25–60 mm, with pubescence like that of branchlets; petiolules 10–30 mm, with pubescence like that of branchlets; leaflets lanceolate, ovate, or elliptic, (6–)13–24 × (3.5–)7–14.4 cm, subcoriaceous to coriaceous, 5 or 6 pairs of lateral veins, each lateral vein initiating at a 45°–60° angle with the midrib and gradually curving upward toward margin, tertiary veins conspicuous, connecting midrib and lateral veins, higher order venation forming a medium to fine, closed network, all veins immersed adaxially and raised abaxially, adaxial surface drying brownish green, somewhat bullate in more coriaceous leaflets, midrib and often lateral veins and surface pubescent, inconspicuously but abundantly lepidote, with or without scattered glands, abaxial surface drying grayish green, pilose or with erect to spreading, white trichomes, 0.2–0.3 mm, abundantly lepidote, often with fields of glands in the axils of most of the lateral veins with the midrib, margin flat, base cordate, subcordate, or rounded, apex acute or obtuse. Inflorescence a raceme or racemose panicle, peduncle with rachis 15–25 cm with 20 to 30 flowers, peduncle 3–5 mm wide at base, peduncle, rachis, and pedicels drying reddish brown with pubescence like that of branchlets, bracteoles absent or not seen; calyx (7–)10–12 × (7–)11–12 mm, coriaceous, with minute, appressed, ferruginous trichomes and densely lepidote, glandular fields 2 or 2.5 pairs; corolla white, infundibular from cylindric base, curved 1/3 distance from base, 4–5 cm, subcoriaceous, tube 3–4 cm with cylindric base 9–10 mm long and mouth 12–15 mm wide, externally and internally pubescent with minute trichomes above glabrous base and internally with clusters of glandular papillae or villous at bases of stamens and staminode, lobes (5–)10–12 × 8–14 mm; stamens and staminode inserted 6–8 mm from base of corolla tube, anthers ca. 4 mm, longer filaments 22–23 mm, shorter filaments 17–20 mm, staminode 5.5–7 mm; disc 1–2 × 4–5 mm; pistil ca. 3.6 cm, ovary (3–)4–4.5 × (1.5–)2.2–2.5 mm, stipe absent, stigma orbicular. Fruit unknown.

Distribution. *Distictella chocoensis* is endemic to the Chocó and Valle del Cauca departments of Colombia. It has been found in wet forests from sea level to 110 m elevation. Figure 2A.

Phenology. Flowering July, October, and December; fruiting material not known.

Discussion. *Distictella chocoensis* is most similar to *D. arenaria*. *Distictella arenaria* differs from *D. chocoensis* in having the petiolules longer than the petioles, tertiary veins branching, and the ovary on a stipe (see discussion of *D. arenaria*). *Distictella arenaria* is known from southern Venezuela and eastern Colombia, where it is usually found in white sand thickets, shrubby islands in savannas, and disturbed areas.

Additional specimens examined. COLOMBIA. **Chocó:** 50 m, *J. J. Triana 4124-10* (BM). **Valle del Cauca:** Bajo Calima, rd. to Juanchaco Palmeras, *A. H. Gentry et al. 47844* (MO), *47957* (MO); Bajo Calima, Concession of Carton de Colombia, near entrance to Dindo area, *A. H. Gentry et al. 53286* (MO); Bajo Calima, Concesión Pulpapel/Buenaventura, *M. Monsalve B. 1916* (MO).

4. **Distictella cremersii** A. H. Gentry, Phytologia 46: 209. 1980. TYPE: French Guiana. Haut Tampoc, le long des Criques pres de la Crique Alice, 1 Apr. 1977, *G. Cremers 4589* (holotype, MO!; isotype, CAY not seen).

Liana; young branchlets terete or flattened, drying reddish brown, hollow or solid, abundantly lepidote, sparsely pubescent; trichomes to ca. 0.03 mm; pseudostipules not seen. Leaves bifoliolate, trifid tendril sometimes present; petiole 15–17 mm, with trichomes like those of branchlets, or sometimes longer to 0.3 mm; petiolules 8–12 mm, with trichomes like those of branchlets, or sometimes longer to 0.3 mm; leaflets elliptic, 10.3–16 × 5–7.5 cm, chartaceous, 4 to 7 pairs of lateral veins, each lateral vein initiating at a 20°–45° angle with the midrib and curving toward the apex and fading, tertiary veins connecting lateral veins and midrib or to a lesser extent weakly anastomosing with higher order venation to form an open or loosely closed network, all veins immersed adaxially or all but midrib flat, midrib and lateral veins raised abaxially, and other veins immersed to flat, both surfaces drying olive-green or brownish green, adaxial surface without trichomes or midrib with minute appressed trichomes, scattered lepidote, glands not seen, abaxial surface with axils of lateral veins with midrib pilose, and some trichomes often along midrib, scattered lepidote, usually with scattered glands, margin flat, base cuneate, cuneate and then rounded, or inequilateral with one side acute and the other obtuse, apex acuminate or obtuse and then briefly acuminate, tip rounded and then apiculate. Capsule broadly elliptic or oblong, not curved, 7–11 × 4–5.5 cm, 3–4 cm diam., base acute and truncate, apex obtuse, valves strongly convex, drying greenish gold or golden brown, densely pubescent with minute, appressed, golden trichomes, midrib not evident, wall 4–5 mm thick. Seeds 14–16 × 12–20 mm, wings nearly totally reduced, poorly demarcated from seed body, reddish brown or reddish black, subcoriaceous, opaque, the veins not contrasting in color to surface.

Distribution. *Distictella cremersii* is known from Suriname, French Guiana, and Ilha de Marajó, Pará, Brazil. It is found in riparian vegetation; the elevation indicated on only one specimen is 25 m. This specimen (*R. Evans & G. Lewis 1869*) also described the habitat as a seasonally inundated, secondary, white sand forest. Figure 1A.

Phenology. Fruiting March and April. Flowering material not seen.

Discussion. Flowering material of *Distictella cremersii* is not known, but the fruit and vegetative material suggest a relationship with *D. racemosa*. The leaflets are similar to those of *D. racemosa* var. *translucida*: the lateral vein axils are pilose and there are no glandular fields at the leaflet apex or base. The fruits and seeds suggest *D. racemosa* var. *racemosa*, except that the fruits of *D. racemosa* var. *racemosa* are relatively narrower and thinner (8–16 × 3.5–7 cm, 0.5–4.5 cm diam.) and often compressed and split along the midrib at maturity, and the seeds have a much larger wing (seeds 15–28 × 24–45 mm). Label information currently available suggests that *D. cremersii* is found in riparian vegetation (seasonally inundated forests on white sand), *D. racemosa* var. *racemosa* in seasonally inundated forests associated with black water, and *D. racemosa* var. *translucida* in forests that are not seasonally flooded.

Additional specimens examined. BRAZIL. **Pará:** Ilha de Marajó, rio Mucunas, afluente do rio Anajás, em frente a cidade de Anajás, *A. S. Tavares 358* (MO). FRENCH GUIANA. Rivière Camopi, en Amont du Saut Yaniwé, *J.-J. de Granville 2080* (MO); Haute Approuague, crique Mataroony, *R. A. A. Oldeman B-997* (MO); Rivière Tampoc, saut Koumakou, *Moretti 636* (MO). SURINAME. **Para:** Along rd. from Zanderij to Kraka, 4.9 km from intersection w/ Zanderij Hwy., 30 m before bridge over Sabakoe Creek, *R. Evans & G. Lewis 1869* (MO).

5. **Distictella cuneifolia** (DC.) Sandwith, Kew Bull. 1953: 476. 1953 [1954]. Basionym: *Pithecoctenium cuneifolium* DC. in A. DC., Prodr. 9: 196. 1845. TYPE: Without country [Bolivia, cf. disc.]. "Para," s.d., s. coll., s.n. (holotype, P not seen, photo F neg. 39945!, photo K not seen; isotypes, G-DC fragm. not seen, microfiche G-DC 9.196.16!, G fragm. not seen).

Low liana or scandent shrub to 3 m; young branchlets terete, drying dull black or brown, solid, lepidote, pubescent; trichomes dull white, to ca. 0.06 mm; pseudostipules not seen. Leaves bifoliolate, trifid tendril often present; petiole 6–16 mm, with trichomes like those of branchlets; petiolules 4–10 mm, with trichomes like those of branchlets; leaflets narrowly spatulate, almost oblong, or rarely oblong or elliptic, 4.7–8(11) × 1.8–3.3(4) cm, coriaceous or subcoriaceous, 5 to 7 pairs of lateral veins, each lateral vein initiating at a 45°(60°) angle with the midrib and curving toward the apex, anastomosing with tertiary veins and weakly brochidodromous, tertiary veins inconspicuous, loosely open-reticulate, all veins immersed adaxially, midrib raised abaxially, and other veins immersed to flat (lateral veins sometimes slightly raised), both surfaces drying gray-green or brownish green, adaxial surface without trichomes or midrib with minute appressed trichomes, abundantly lepidote, usually with scattered glands, abaxial surface without trichomes, abundantly lepidote, usually with scattered glands, margin flat (rarely slightly revolute), base cuneate or cuneate and then rounded, apex rounded (rarely acute) and emarginated or apiculate. Inflorescence a raceme or racemose panicle, peduncle with rachis 7–12.5 cm with 9 to 17 flowers, peduncle 2–4 mm wide at base, peduncle, rachis, and pedicels drying dull grayish green, pubescent with trichomes like those of branchlets, bracteoles absent or not seen; calyx 8–10 × 8–9 mm, coriaceous, pubescent with minute, white trichomes tightly appressed, glandular fields 2 pairs; corolla white, campanulate from cylindric base, curved 1/5 distance from base, 5–8 cm, membranous, tube 3.8–6.5 cm with cylindric base 9–13 mm long and mouth 20–29 mm wide, externally densely puberulent with minute trichomes above glabrous base, internally minutely puberulent, with villous clusters of trichomes at bases of stamens and staminode, lobes 10–15 × 15–20 mm; stamens and staminode inserted 8–9 mm from base of corolla tube, anthers ca. 5 mm, longer filaments 25–27 mm, shorter filaments 18–21 mm, staminode 5–7 mm; disc ca. 1 × 3–4 mm; pistil 3.8–4.7 cm, ovary 3–4 × 1.5–2 mm, stipe 0.3–1 mm, stigma lanceolate or subulate. Capsule weakly spatulate, nearly oblong, slightly curved, 6–6.7 × 2.5–2.7 cm, ca. 0.4–0.6 cm diam., base cuneate and truncate, apex obtuse and apiculate, one valve concave and one convex, drying red-brown, densely pubescent with minute, appressed, golden trichomes, midrib conspicuously prominent, wall 1.5–2 mm thick. Seeds 9–12 × 26–28 mm, wings well demarcated from seed body, light reddish brown or tan with tips dirty white, membranous, hyaline especially at tips, the veins contrasting in color to surface.

Distribution. *Distictella cuneifolia* is known from the Santa Cruz and Beni departments of Bolivia. It is often found growing in savannas or pampas with fine, black, silty soil, frequently described as seasonally inundated or as with numerous large termite mounds, between 100 and 400 m elevation. Figure 1A.

Phenology. Flowering January, February, and May; fruiting July and October.

Discussion. The only collection information on the type of *Pithecoctenium cuneifolium* is the word, or abbreviation, "Para." De Candolle (1845) and Sandwith (1953) assumed this to be the state of Pará in northeastern Brazil. I questioned this, given the currently known distribution of this taxon. A number of recent collections have been made along the Río Paraguá in the department of Santa Cruz, Bolivia, and I thought that the "Para." on the type specimen might be an abbreviated form for this river. Discussions with James Solomon and consultations with Goodman (1972) and Funk and Mori (1989) led me to conclude that the most likely person to have collected along this river prior to 1845 was A. D. d'Orbigny. However, while

Orbigny did travel in this general vicinity, I found no mention of the Río Paraguá in Orbigny (1846), and the type locality of *Distictella cuneifolia* remains dubious.

Distictella cuneifolia is most similar to *D. campinae* and bifoliolate specimens of *D. laevis*. Gentry, following Sandwith (1962), identified specimens of *D. campinae* as *D. cuneifolia*, which may cause confusion in the Tropicos database for specimens this author has not also studied. The most striking difference between *D. campinae* and *D. cuneifolia* is the lateral veins in the leaflets, which are initiated at nearly a right angle (70°–90°) in *D. campinae* and extend in almost a straight line to the margin before looping up to meet the next lateral vein. They also differ markedly in the seeds; the wings are opaque, greatly reduced, and poorly demarcated from the seed body in *D. campinae*. *Distictella laevis* is most dissimilar to *D. cuneifolia* in its very short petioles (1–4 mm) and short to absent (to 1 or rarely 2 mm) petiolules. It also appears to never develop tendrils, which are very common in *D. cuneifolia*. From the limited material observed it also seems that *D. laevis* has smaller corollas (4.5–5.5 cm) than *D. cuneifolia*. Both *D. campinae* and *D. laevis* differ from *D. cuneifolia* in habitat; they are found in white sand savannas or campinas.

Selected specimens examined. BOLIVIA. **Beni:** Prov. Gral. Ballivián, Riberalta, 160 km hacia Santa Rosa, *S. G. Beck 20589* (MO). **Santa Cruz:** Velasco, camp. El Refugio a 10 km al E de la casa, yendo hacia la serrania Caparuch, Puesto Pasto, *R. Guillén & S. Coria 2111* (MO); Velasco Prov., Reserva Ecológica El Refugio, 1500 m al SE hacia la junta del río Paraguá y Tarvo, *R. Guillén & V. Roca 3092* (MO); Velasco, Parque Noel Kempff M. camp. La Torre, *R. Quevedo et al. 2611* (MO).

6. **Distictella dasytricha** Sandwith, Kew Bull. 1953: 476. 1953 [1954]. TYPE: Brazil. Goiás: Mun. Yataí (Jataí), Queixada, 8 July 1949, *A. Macêdo 1906* (holotype, K!; isotype, G!, MO!, US not seen, digitized image!).

Liana; young branchlets terete, drying dull black or golden brown, hollow (rarely solid), pubescent with spreading trichomes; trichomes golden, the longest 1–2 mm; pseudostipules occasionally present, oblong to falcate, thick, 4–5 × ca. 1 mm. Leaves bifoliolate, trifid tendril occasionally present; petiole 10–20 mm, with pubescence like that of branchlets; petiolules 7–20 mm, with pubescence like that of branchlets; leaflets oblanceolate to obovate, 9–15.5 × 5.5–9.9 cm, subcoriaceous to coriaceous, 4 or 5(6 or 7) pairs of lateral veins, each lateral vein initiating at a 20° angle with the midrib and extending toward apex before curving and fading, tertiary veins conspicuous, connecting midrib and lateral veins, the higher order venation strongly reticulate and forming a fine, closed network, all veins immersed adaxially and raised abaxially, both surfaces drying brownish green, adaxial surface with golden, erect trichomes 0.6–1.9 mm, dense to scattered on main veins and scattered on surface, abundantly lepidote, with or without scattered glands, abaxial surface with dense, golden trichomes 0.6–1.1 mm, erect to spreading, or pilose, abundantly lepidote, without visible glands, margin flat, base cuneate, apex rounded and cuspidate or emarginate, or obtuse. Inflorescence a raceme or racemose panicle, peduncle with rachis 3–36 cm with 4 to 18 flowers, peduncle 2–4.5 mm wide at base, peduncle, rachis, and pedicels drying brown or golden brown, pubescent with trichomes like branchlets, bracteoles ca. 6.5 × 2 mm, lost before anthesis; calyx 8–13 × 10–12 mm, subcoriaceous, pubescent with dense golden trichomes to 1 mm, erect to ascending, glandular fields 2 pairs; corolla white with yellow throat, infundibular from cylindric base, curved 1/4 distance from base, 5–7 cm, chartaceous, tube 3–6 cm with cylindric base 10–15 mm long and mouth 15–25 mm wide, externally and internally densely pubescent with minute trichomes above glabrous base, internally with villous clusters of trichomes at bases of stamens and staminode, lobes 10–17 × 15–25 mm; stamens and staminode inserted 10–15 mm from base of corolla tube, anthers 4.5–5 mm, longer filaments 20–25 mm, shorter filaments 16–22 mm, staminode ca. 6 mm; disc ca. 2 × 4 mm; pistil ca. 4.1 cm, ovary 4–5 × 2–2.5 mm, stipe ca. 1 mm, stigma subulate. Capsule elliptic-oblong, curved, 6.8–7.5 × 3–3.5 cm, 0.8–1 cm diam., base obtuse, apex obtuse to rounded, one valve concave and the other convex, subvelutinous with minute, golden trichomes, somewhat warty, especially at base, midrib prominent, wall 1–1.5 mm thick. Seeds 13–15 × 27–35 mm, wings poorly demarcated from seed body, golden brown, membranous, hyaline only at tips, the veins not contrasting in color to the surface.

Distribution. *Distictella dasytricha* is known from Brazil (Goiás and Acre) and Peru (Loreto). It is reportedly found in swampy forested areas at 240 m elevation. Figure 2A.

Phenology. Flowering July and November; fruiting October.

Discussion. Gentry identified numerous sterile collections throughout the Amazon (in Colombia, Peru, Bolivia, and Venezuela) as *Distictella* aff. *dasytricha*, and included *D. dasytricha* in his unpublished treatment of Bignoniaceae for the *Flora of Colombia* based on one of these collections (*A. H. Gentry et al. 9087*, MO) and in the *Flora of the Venezuelan Guayana* (Gentry, 1997), based on *R.*

Liesner & B. Holst 21319 (MO). These sterile collections differ from the known fertile collections (and are not included in the concept of *D. dasytricha* employed here) in having much larger, membranous leaflets, which are much less pubescent, with the higher order venation not or only slightly raised abaxially but slightly raised adaxially, and forming a very loose network. The leaflet apices also tend to be very long attenuate. Gentry (1997) suggested that the Venezuelan collection, in addition to several Peruvian collections, might be specifically distinct from true *D. dasytricha*.

Distictella dasytricha is similar to *D. reticulata* in its venation (four or five pairs of lateral veins initiating at a 20° angle with midrib, higher order venation strongly reticulate, forming a very fine, closed network, all venation immersed adaxially and raised abaxially), but *D. reticulata* has smaller trichomes (to ca. 0.4 mm long) and capsules not curved and without a prominent midrib. The only species of *Distictella* with trichomes of similar length to those of *D. dasytricha* is *D. porphyrotricha*. *Distictella porphyrotricha* differs from *D. dasytricha* most markedly in its bullate leaflets with much looser venation reticulation. It also has lateral veins diverging from the midrib at a wider angle (45°), trichomes ferruginous, red, or white, inflorescence with persistent bracteoles, and a capsule that is longer (ca. 12 cm), not curved, with an acuminate apex, and without a prominent midrib, and is found at higher elevations (900–1380 m) in terra firme forests.

Additional specimens examined. BRAZIL. **Acre:** Proj. RADAM, sub-base de Cruzeiro do Sul, divisa Brasil-Peru, ponto 01-SC-18-XA, *L. R. Marinho 340* (MO). **Goiás:** Mun. Yataí (Jataí), Queixada, 28 Oct. 1950, *A. Macêdo 1906 [a]* (K). PERU. **Loreto:** Prov. Alto Amazonas, Capihuari, 5 km NE of Andoas on Río Capihuari, near Ecuador border along oil pipeline, *A. H. Gentry & C. Díaz S. 28225* (MO), *28234* (MO).

7. **Distictella elongata** (Vahl) Urb., Repert. Spec. Nov. Regni Veg. 14: 310. 1916. Basionym: *Bignonia elongata* Vahl, Eclog. Amer. 2: 45, t. 16. 1798. *Pithecoctenium elongatum* (Vahl) Klotzsch in M. R. Schomb., Reis. Br.-Guiana 3: 1158. 1848 [1849]. *Distictis elongata* (Vahl) Bureau ex Benth. in Benth. & Hook. f., Gen. Pl. 2: 1038. 1876. TYPE: French Guiana. Cayenne, s.d., *J. P. B. von Rohr 2001* (lectotype, designated by Gentry, 1982: 174, C!, photo F neg. 22130!).

Pithecoctenium obovatum Mart. ex DC. in A. DC., Prodr. 9: 196. 1845. TYPE: French Guiana. s. loc., s.d., *J. Martin s.n.* (holotype, BR "Herb. Martius" not seen, digitized image!; isotype, P not seen).

Liana; young branchlets terete, flattened at nodes, drying dull brown, usually hollow, densely lepidote, densely tomentose or with the trichomes erect then weakly curving or ascending; trichomes tan, 0.1–0.3 mm; pseudostipules rarely present, obovate, ca. 5 × 3.5 mm. Leaves bifoliolate, trifid tendril sometimes present; petiole 5–22 mm, with pubescence like that of branchlets; petiolules 5–11 mm, with pubescence like that of branchlets; leaflets irregularly obovate, 6.5–13.7 × 3.5–8.2 cm, chartaceous to subcoriaceous, 3 to 5 pairs of lateral veins, each lateral vein initiating at a 20° angle with the midrib and extending toward apex before curving and anastomosing with tertiary veins, tertiary veins conspicuous, generally closely spaced and connecting midrib and lateral veins, to lesser extent anastomosing with higher order venation, which form a fine, closed network, all veins immersed adaxially and raised abaxially, adaxial surface drying brownish yellow-green, without trichomes except for midrib and apex and sometimes lateral veins, abundantly lepidote, with or without scattered glands, abaxial surface drying grayish yellow-green, densely tomentose with white, often translucent, trichomes to 0.1 mm long and tangled, abundantly lepidote, usually with fields of glands in the axils of most of the lateral veins with the midrib (rarely absent), margin flat, base shortly attenuate or cuneate, apex obtuse, rounded, or obtuse and cuspidate. Inflorescence a racemose panicle (perhaps rarely raceme), peduncle with rachis 25–40 cm with 20 to 25 flowers, peduncle 3–4 mm wide at base, peduncle, rachis, and pedicels drying dull brown, pubescent with trichomes like branchlets, bracteoles ca. 4 × 1 mm, lost before anthesis; calyx 10–12 × 10–11 mm, coriaceous, pubescent with trichomes tan to ferruginous, like those of branchlets, and lepidote, glandular fields 2 pairs; corolla white with yellow throat, infundibular from cylindric base, curved 1/3 distance from base, (4–)5.5–7.2 cm, chartaceous, tube 4.5–5.2 cm long with cylindric base 9–11 mm long and mouth 19–20 mm wide, externally and internally pubescent with minute trichomes above glabrous base, internally with clusters of glandular papillae (rarely villous) at bases of stamens and staminode, lobes 10–20 × 15–20 mm; stamens and staminode inserted 10–12 mm from base of corolla tube, anthers ca. 4 mm, longer filaments 22–25 mm, shorter filaments 20–21 mm, staminode ca. 6 mm; disc 1–1.5 × ca. 4 mm; pistil 3.9–4.7 cm, ovary 4–5 × ca. 2 mm, stipe absent to 1 mm, stigma lanceolate. Capsule elliptic, curved, ca. 8 × 2.8 cm, ca. 1 cm diam., base acute and truncate, apex acuminate, one valve concave and the other convex, drying golden-brown, densely pubescent with trichomes like those of branchlets, slightly warty, midrib prominent, wall ca. 1.25 mm thick. Seeds 8–10 × 25–28 mm, wings poorly demarcated from seed body, reddish brown with tips lighter brown, membranous, hyaline, the veins contrasting in color to surface.

Distribution. *Distictella elongata* is known from French Guiana, Suriname, and Pará, Brazil, with one slightly atypical collection from Amazonas, Brazil, and another from Rondônia, Brazil. It is found in secondary forests frequently characterized as growing on white sand and as being on terra firme, at elevations ranging from sea level to 200 m. Figure 2A.

Phenology. Flowering January, February, June, and December; fruiting June.

Discussion. *Pithecoctenium obovatum* is placed in synonymy of *Distictella elongata* based on observation of the digitized image of the holotype (barcode BR 880344) and following the synonymy of Sandwith (1937, 1938a).

Gentry's concept of the species *Distictella elongata* is very different from that employed here. His identification of herbarium specimens indicates a very broad concept. Gentry identified as *D. elongata* specimens that are treated here as three different species, *D. elongata*, *D. mansoana*, and *D. parkeri*. The general distribution range that he cited for *D. elongata* (1982, 1997) reflects this usage and in the *Flora de Venezuela* (1982), Gentry listed *D. mansoana* in synonymy below *D. elongata*. However, Gentry's descriptions and keys in the *Flora de Venezuela* (1982) and *Flora of the Venezuelan Guayana* (1997) appear to be based on specimens of *D. parkeri*. *Distictella parkeri* differs from *D. elongata* most markedly in its leaflets, which have a rounded to cordate base, tertiary veins immersed or flat on the abaxial surface, and lateral veins forming a wider angle (45°) to the midrib. In addition, the midrib of the fruit of *D. parkeri* is not at all prominent. The two species are found in similar habitats and have overlapping ranges of distribution. *Distictella mansoana* differs from *D. elongata* in generally having leaflets with bases usually rounded to subcordate, and the tertiary veins usually raised on the adaxial surface and anastomosing with the higher order venation to form a very loose network. The fruits of *D. mansoana* are somewhat larger (9.5–16 cm long), glandular, and warty, and the seeds are much larger (13–20 × 32–55 mm) with well-demarcated wings. Lohmann and Pirani (1998) and Lohmann and Hopkins (1999) used the name *D. elongata* for *D. mansoana*, following Gentry's (1982) synonymy and specimen identifications. The range of *D. mansoana* is generally to the south of *D. elongata* in Brazil, Bolivia, and Peru, and it is usually found at higher elevations.

Distictella elongata is similar to *D. dasytricha* in overall leaflet shape and venation, but the latter has much longer trichomes on the branchlets, petioles, petiolules, and inflorescence (the longest 1–2 mm) and capsules with the apex obtuse to rounded. Small-leaved specimens of *D. elongata* are sometimes identified as *D. obovata*, but the latter has coriaceous leaflets with a recurved margin and lateral veins at a wider angle (45°) with the midrib, flowers in a raceme, and the fruit dull black without a prominent midrib. *Distictella obovata* is found at higher elevations (450–1660 m) and appears to be restricted to the Pakaraima Mountains of Guyana and adjacent areas of Bolívar, Venezuela.

Selected specimens examined. BRAZIL. **Amazonas:** Rio Aripúanã, ramal entre Transamazônica e Prainha, *N. T. Silva 4356* (MO). **Pará:** Mun. Oriximiná, rio Trombetas, cachoeira Porteira, *C. A. Cid Ferreira et al. 1264* (MO), *N. T. Silva & M. R. Santos 4703* (MO); Mun. de Oriximiná, campos do Ariramba, Rio Jaramacarú, *G. Martinelli 6850* (MO). **Rondônia:** Vilhena, rio Piracolina, *M. G. Silva & C. Rosario 4917* (MO). FRENCH GUIANA. Rte. RN2 Cayenne–Regina, pk 36, *F. Billiet & B. Jadin 5762* (BR); Savane Renner–Région littorale, *G. Cremers & J.-J. de Granville 14427* (MO); Kourou, center spatial, *C. Feuillet 1588* (MO). SURINAME. Betw. Tawajari-weg & de Crane-weg, W of Lelydorp, *N. M. Heyde 591* (MO).

8. **Distictella laevis** (Sandwith) A. H. Gentry, Mem. New York Bot. Gard. 29: 274. 1978. Basionym: *Distictella monophylla* var. *laevis* Sandwith, Mem. New York Bot. Gard. 9: 362. 1957. TYPE: Venezuela. Amazonas: Cerro Yapacana, Río Orinoco, 100 m, 7 Jan. 1951, *B. Maguire, R. S. Cowan & J. Wurdack 30788* (holotype, NY not seen, microfiche 947.A8!, digitized image!).

Shrub; erect or semi-scandent, 0.5–3 m; young branchlets terete (rarely flattened at nodes), drying dull brown or black, solid, sometimes lepidote, puberulent or glabrescent; trichomes colorless or ferruginous, less than 0.1 mm; pseudostipules caducous, clavate, thick, 2–4 × 0.7–1.2 mm. Leaves unifoliolate or bifoliolate, bifoliolate leaves with terminal scar, gland, or residual tendril ca. 1 mm; petiole 1–4 mm, puberulent with trichomes like those of branchlets; petiolules absent to 1(–2) mm, puberulent with trichomes like those of branchlets; leaflets oblong, or sometimes in bifoliolate leaves, oblanceolate to spatulate, 4.2–12 × 1.3–8.3 cm, coriaceous, 4 to 7 pairs of lateral veins initiating at a 45° angle with the midrib and curving upward toward margin, anastomosing with tertiary veins or weakly brochidodromous, tertiary veins inconspicuous, loosely open-reticulate, all veins immersed adaxially, midrib raised abaxially, and other veins immersed to flat (lateral veins sometimes slightly raised in older leaves), both surfaces drying grayish or yellowish green, adaxial surface sometimes glossy, without trichomes or puberulent at base of midrib, usually scattered lepidote, sometimes with scattered glands, abaxial surface puberulent at base of midrib or without trichomes, scattered lepidote, often with glandular fields at base and sometimes at apex or glands scattered, margin flat (rarely slightly revolute), base rounded, subcordate, or cuneate and rounded, apex rounded or obtuse, often with small mucro or sometimes emarginate. Inflorescence a raceme, or rarely with lowest pedicels branching, peduncle with rachis 2.5–9 cm with 6 to 16 flowers, peduncle 2–3 mm wide at base, peduncle, rachis, and pedicels drying dull reddish or grayish brown, puberulent with trichomes like those of branchlets, bracteoles 1–7 × 0.5–4 mm, early caducous; calyx 5–6 × 5–8 mm, membranous, puberulent with minute red or colorless trichomes, glandular fields 1 to 5 pairs; corolla white, sometimes with yellow lobes and throat, infundibular from cylindric base, curved 1/3 distance from base, 4.5–5.5 cm, membranous, tube 3.2–4.5 cm with cylindric base 6–9 mm long and mouth 12–20 mm wide, externally and internally densely puberulent with minute trichomes above glabrous base, internally with villous clusters of trichomes at bases of stamens and staminode, lobes 8–15 × 9–15 mm; stamens and staminode inserted 8–10 mm from base of corolla tube, anthers 3–5 mm, longer filaments 18–20 mm, shorter filaments 12–17 mm, staminode 2.2–5 mm; disc 1–2 × 1.5–4 mm; pistil 2.9–3.3 cm, ovary 3–4 × 1–2 mm, stipe 0.5–2 mm, stigma ovate. Capsule oblong, not curved, 5–6.3 × ca. 2.5 cm, ca. 0.3 cm thick, base rounded, apex obtuse, valves compressed, drying brown, densely puberulent with minute white or golden trichomes, glands scattered, often granular, midrib not evident to subevidently raised, wall 1–2 mm thick. Seeds 10–14 × 25–28 mm, wings well demarcated from seed body, reddish brown with tips yellowish tan, membranous, hyaline, especially at tips, the veins contrasting in color to surface.

Distribution. *Distictella laevis* is known from Venezuela (Amazonas, the type) and Brazil (Pará and Amazonas). It is often found growing in open campina in white sandy soil, below 400 m elevation. Figure 1A.

Phenology. Flowering January, February, April, June, and September; fruiting February, May, and September.

Discussion. Unifoliolate specimens of *Distictella laevis* are similar to *D. monophylla*, which differs primarily in the abaxial surface of the leaflets, which is pubescent with all venation raised and higher venation forming a fine, closed network. One specimen (*O. Huber et al. 3771*) was seen that seemed to be intermediate between *D. laevis* and *D. monophylla*.

Bifoliolate specimens of *Distictella laevis* are similar to both *D. campinae* and *D. cuneifolia*. The most striking difference between *D. campinae* and *D. laevis* is the lateral veins in the leaflets of *D. campinae*, which are initiated at nearly a right angle (70°–90°) to the midrib and extend in almost a straight line to the margin before looping up to meet the next lateral vein. They also differ markedly in the seeds; the wings are opaque, greatly reduced, and poorly demarcated in *D. campinae*. *Distictella cuneifolia* differs from *D. laevis* in habitat (black silty soils vs. white sand), geography (endemic to Bolivia), longer petioles (6–16 mm) and petiolules (4–10 mm), larger corollas (5–8 cm long), and the presence of leaf tendrils.

Selected specimens examined. BRAZIL. **Amazonas:** Transamazônica–Trecho Humaitá–Itaituba, Km 135 de Humaitá, perto de Km 895 da Transamazônica, *G. Vieíra et al. 108* (MO); Transamazon Hwy., 53 km W of Aripuanã River, *C. E. Calderón et al. 2703* (MO). **Pará:** Serra do Cachimbo, Sul de Estado, *M. Alvarenga s.n. (INPA 120328)* (MO); Region of Missão Velha, a Mundurukú village, ca. 2 km N of Rio Cururú, *W. R. Anderson 10928* (MO); Missão Cururú, *N. A. Rosa & M. R. Santos 1862* (MO).

9. Distictella lohmanniae A. Pool, sp. nov. TYPE: Brazil. Amazonas: Reserva Florestal Ducke, Manaus–Itacoatiara, Km 26, 20 m, 2°53′S, 59°58′W, 14 July 1995, *L. G. Lohmann & C. F. da Silva 20* (holotype, MO!; isotype, INPA not seen). Figure 3A–C.

Haec species *Distictellae parkeri* affinis, sed ab ea foliolis discoloribus subtus trichomatibus minutis appressis vestitis, nervis lateralibus angulum ca. 20° cum costa formantibus, nervis tertiariis plerumque parallelis approximatis non ramificantibus, capsula parum curva costa prominenti et seminibus alis a corpore bene distinctis praeditis distinguitur.

Liana; young branchlets terete, flattened at nodes, drying grayish green to dull brown, solid, lepidote, densely pubescent; trichomes white or ferruginous, to 0.03 mm long, tightly appressed; pseudostipules rarely present, elliptic, thick, ca. 3 × 1 mm. Leaves bifoliolate, trifid tendril sometimes present; petiole 6–20 mm, with pubescence like that of branchlets; petiolules 10–31 mm, with pubescence like that of branchlets; leaflets ovate-oblong or obovate-oblong, 8–15.3 × 4.2–9.3 cm, subcoriaceous, 4 to 6 pairs of lateral veins, each lateral vein initiating at a 20° angle with the midrib (except sometimes the basal) and extending toward apex, anastomosing with tertiary veins and fading, tertiary veins fairly conspicuous, connecting midrib and lateral veins, higher order venation loosely open-reticulate, midrib and lateral veins immersed and tertiary veins slightly raised to slightly immersed adaxially, midrib and lateral veins raised abaxially, tertiary veins immersed, adaxial surface drying dark blackish green, without trichomes, abundantly lepidote, without glands, abaxial surface drying grayish yellow-green, densely covered with minute appressed trichomes like those of branchlets, not noticeably lepidote, usually with a few glands in the axils of basal lateral veins with the midrib, margin flat, base rounded or cuneate, apex rounded or obtuse and apiculate to cuspidate. Inflorescence a racemose panicle, peduncle with rachis 6–11 cm with 10 to 15 flowers, peduncle 4–6 mm wide at base, peduncle, rachis, and pedicels drying dull brown, pubescent with trichomes like branchlets, bracteoles ca. 2.5 × 1 mm, lost early; calyx ca. 10 × 10–11 mm, coriaceous, pubescent with minute, ferruginous, appressed trichomes and lepidote, glandular fields 2.5 pairs; corolla white with yellow throat, infundibular from cylindric base, curved 1/4 distance from base, 5–7 cm, subcoriaceous, tube 4–5.2 cm with cylindric base 9–10 mm long and mouth ca. 20 mm wide, externally densely pubescent with minute trichomes above glabrous base, internally densely lepidote with a few minute appressed trichomes and villous clusters of trichomes at bases of stamens and staminode, lobes 10–20 × 10–20 mm; stamens and staminode inserted 8–9 mm from base of corolla tube, anthers ca. 4 mm long, longer filaments 22–29 mm, shorter filaments 19–24 mm, staminode ca. 5 mm; disc ca. 1.5 × 3 mm; pistil ca. 4.5 cm, ovary ca. 5 × 2 mm, stipe apparently absent, stigma lanceolate. Capsule elliptic, slightly curved, ca. 9 × 4 cm, ca. 1.5 cm diam., base acute and truncate, apex acute, one valve slightly concave and the other slightly convex, both somewhat compressed, drying blackish green, densely pubescent with minute, appressed, ferruginous trichomes, somewhat glandular and warty, midrib prominent, capsule splitting along midrib at maturity, wall ca. 4 mm thick. Seeds 14–15 × 40–48 mm, wings well demarcated from seed body, reddish brown with a halo of much lighter brown immediately around body and at wing tips, membranous, hyaline, the veins contrasting in color to surface (Figure: Lohmann & Hopkins, 1999: 620 as *Distictella parkeri*).

Distribution. *Distictella lohmanniae* is known from Amazonas, Brazil, where it is found in terra firme forests between 50 and 250 m elevation. Figure 2A.

Phenology. Flowering November and December; fruiting July.

IUCN Red List category. *Distictella lohmanniae* is currently known from seven collections. The data are deficient (DD) to determine IUCN Red List status. It is probably not Critically Endangered (CR), as its extent of occurrence is estimated to be more than 100 km^2 and its area of occupancy is estimated to be more than 10 km^2 (IUCN, 2001).

Discussion. At least one specimen of *Distictella lohmanniae*, *A. H. Gentry 12976*, was determined by Gentry and distributed to NY as the unpublished name *D. subincanum* A. H. Gentry. Most of the specimens cited as *D. lohmanniae* were previously determined by A. H. Gentry as *D. parkeri*, and Lohmann and Hopkins (1999) treated this taxon under that name in their treatment of Bignoniaceae for the *Flora da Reserva Ducke*. The species is named for Lúcia Lohmann, who collected the type specimen and helped me to recognize *D. lohmanniae* as distinct from similar species.

Distictella lohmanniae can be recognized from the other species of *Distictella* by its minute and strongly appressed foliar trichomes, similar to those of *Distictis pulverulenta*. It is most similar to *Distictella parkeri*, which has leaflets drying the same color on both surfaces with lateral veins at a 45° angle and tertiary veins generally branching, and the abaxial surface tomentose with trichomes to 0.15 or 0.2 mm long, longer inflorescences (peduncle with rachis 15–35 cm), more strongly curving fruits with the midrib not at all evident to subevident, and seeds with the wings poorly demarcated. *Distictella parkeri* is found farther north than *D. lohmanniae*, in the Guianas, Bolívar, Venezuela, and Amapá, Brazil, often in disturbed, white sand forests.

Additional specimens examined. BRAZIL. **Amazonas:** BR 319, Km 60, Manaus–Porto Velho Rd., betw. Rios Castanho & Araça, *G. T. Prance et al. 23051* (MO); Manaus–Igarapé Leão Rd., 5 km from Manaus–Caracarai Rd., *G. T. Prance et al. 11414* (MO); Km 130, Manaus–Caracarai Rd. (BR 174), *A. H. Gentry 12976* (MO); Carauari, Poço Juruá, *A. S. L. da Silva et al. 547* (MO); Distr. Agropecuario, Res. 1501-Km 41 do Smithsonian/INPA, Proj. Din. Biol. dos Fragm. Floretais, *M. A. Freitas et al. 469* (MO); Res. Fl. Ducke, Manaus–Itacoatiara, Km 26, INPA Overseas Development Admin., *s. coll. 3994-24* (MO).

10. **Distictella magnoliifolia** (Kunth) Sandwith, Lilloa 3: 460. 1938. Basionym: *Bignonia magnoliifolia* Kunth in Humb., Bonpl. & Kunth, Nov. Gen. Sp. (quarto ed.) 3: 136. 1818 [1819], as "*magnoliaefolia*." TYPE: Venezuela. Javita, ad ripam fluminum Tuamini et Temi (Missiones del Orinoco), *A. Bonpland 973* (lectotype, designated by Sandwith, 1938b: 460, P not seen, F neg. 39415!).

Distictis kochii Pilg. in Koch-Grünberg, Zwei Jahre unter Indianern 2: 372. 1910. *Distictella kochii* (Pilg.) Urb., Repert. Spec. Nov. Regni Veg. 14: 310. 1916. TYPE: Brazil. Hylaea, Rio Aiary, Maloka, Dec. 1903, *T. Koch-Grünberg 74* (holotype, B presumed destroyed, K photo!).

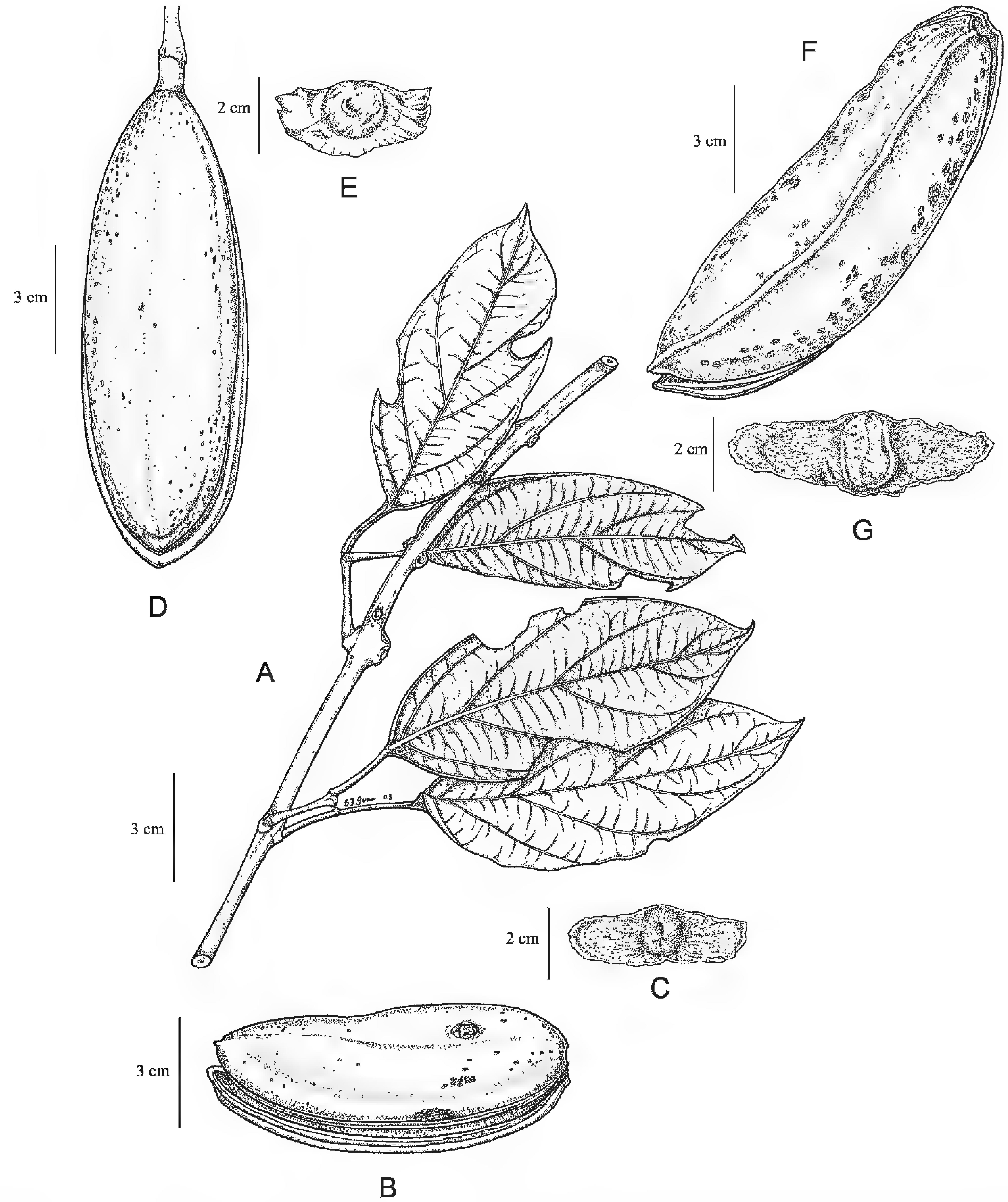

Figure 3. A–C. *Distictella lohmanniae* A. Pool. —A. Branchlet. —B. Fruit. —C. Seed (A, B, C from *L. G. Lohmann & C. F. da Silva 20*, MO). D, E. *Distictella racemosa* (Bureau & K. Schum.) Urb. var. *racemosa*. —D. Fruit. —E. Seed (D, E from *G. T. Prance et al. 3366*, MO). F, G. *Distictella racemosa* var. *translucida* A. Pool. —F. Fruit. —G. Seed (F, G from *S. Hoyos & J. Hernandez 535*, MO).

Liana; young branchlets terete, the nodes often flattened, drying dull black or brown, solid, densely lepidote, without trichomes or with few trichomes appressed at nodes; trichomes ferruginous, minute; pseudostipules rarely present, linear, thick, ca. 8 × 1–1.5 mm. Leaves bifoliolate, trifid tendril often present; petiole 25–55 mm, without trichomes or nearly so, densely lepidote; petiolules 12–40 mm, without trichomes or nearly so, densely lepidote; leaflets ovate or elliptic, often broadly so, 8–24 × 4.5–12.5 cm, coriaceous, 2 to 4 pairs of lateral veins, each lateral vein (above basal) initiating at a 45° angle with the midrib and curving toward the apex, anastomosing with tertiary veins and fading, tertiary veins connecting midrib and lateral veins and weakly reticulate with higher order venation forming a loosely closed network, all veins raised adaxially or midrib and lateral veins flat to immersed, all raised abaxially, both surfaces drying yellow-green or brownish green, adaxial surface without trichomes or base of midrib with minute appressed trichomes, abundantly lepidote, sometimes with scattered glands and glandular fields at apex and in the axils of the basal lateral veins with the midrib, abaxial surface without trichomes, abundantly lepidote, usually with glandular fields at apex and in the axils of the basal lateral veins with the midrib, sometimes with scattered glands, margin slightly recurved, base rounded or subcordate, apex acute, obtuse, or rounded and cuspidate. Inflorescence a racemose panicle, peduncle with rachis 12–32 cm with 10 to 40 flowers, peduncle 2–4 mm wide at base, peduncle, rachis, and pedicels drying black or brown, pubescent with minute ferruginous, or white, appressed trichomes, bracteoles absent or not seen; calyx 7–10 × 7–12 mm, coriaceous, pubescent with minute, ferruginous, appressed trichomes, glandular fields 1 to 2.5 pairs; corolla white with yellow throat, infundibular from cylindric base, curved 1/3 distance from base, 5.5–6.3 cm, coriaceous, tube 3.5–5 cm with cylindric base 8–12 mm long and mouth 16–22 mm wide, externally and internally densely pubescent with minute trichomes above glabrous base, internally with villous clusters of trichomes at bases of stamens and staminode, lobes 12–16 × 12–20 mm; stamens and staminode inserted 8–10 mm from base of corolla tube, anthers 3–4 mm, longer filaments 21–25 mm, shorter filaments 17–20 mm, staminode 4–7 mm; disc 1–1.5 × 4–5 mm; pistil 3.3–4.1 cm, ovary 4–5 × 2–2.5 mm, stipe 0.5–1 mm, stigma subulate. Capsule narrowly oblong, slightly curved, 8–13.5 × 2–2.5 cm, 0.5–1.2 cm diam., base acute and truncate, apex very long attenuate, with one valve slightly concave and one slightly convex, drying black, densely lepidote with few scattered, minute, ferruginous trichomes, numerous glands present, granular and wrinkled, midrib subevident, wall 1–2 mm thick. Seeds ca. 12–15 × 42–50 mm, wings poorly demarcated from seed body, light brown with tips dirty white, membranous, hyaline especially at tips, the veins not contrasting in color to surface.

Distribution. *Distictella magnoliifolia* is known from Colombia (Vaupés and Guainía), Brazil (Amazonas), and Venezuela (Amazonas). It is usually found in scrubby or low forest, or savanna, on white sand, between 75 and 150(300) m elevation. Figure 1B.

Phenology. Flowering February, April, May, July, September, November, and December; fruiting July and December.

Discussion. Sandwith (1938b) selected *A. Bonpland 973* (P) as the lectotype of *Bignonia magnoliifolia* Kunth. This specimen was not seen in this study, but a photo, F neg. 39415, of a P specimen labeled "*Distictis magnoliaefolia* Bur.; *Bignonia magnoliaefolia* Bonpl.; Echantillon del herbier Bonpland" was studied. While the photo is not labeled with the collection number, Sandwith (1953: 478) cites that this is a photo of the type.

Distictis kochii is placed in synonymy of *Distictella magnoliifolia*, based on examination of the digitized image of the photo at K of *T. Koch-Grünberg 74* (B), a synonymy previously proposed by Sandwith (1953).

The concept of *Distictella magnoliifolia* employed here is narrower than that used by Gentry in his various publications (Gentry, 1973, 1977, 1982, 1997) and that used by Burger and Gentry (2000), but follows Sandwith (1953). The illustration labeled *D. magnoliifolia* in Gentry (1973, 1977, 1982) depicts the flowering branch of *F. Woytkowski 5140* and capsule of *B. A. Krukoff 6728*, both treated here as *D. racemosa* var. *racemosa*. The descriptions for the most part also pertain to that taxon except for some of the vegetative characteristics, which seem to be a mixture of this, *D. racemosa* var. *translucida*, and a third, unidentified species. The specimens cited in the *Flora of Panama* (Gentry, 1973), all of which are sterile, are of this latter species. Both varieties of *D. racemosa* differ from *D. magnoliifolia* in having membranous to subcoriaceous leaflets, with (4)5 to 9 pairs of lateral veins and tertiary and higher order venation immersed to flat on the adaxial surface, and capsules that are relatively broader (8–22 × 3.5–7 cm), densely pubescent, and with a thicker wall (3–5 mm) and an acute to rounded apex. In addition, *D. racemosa* var. *racemosa* differs from *D. magnoliifolia* in having fruits that are not curved and seeds with the wings coriaceous or subcoriaceous, and opaque. *Distictella racemosa* var. *translucida* differs from *D. magnoliifolia* in usually having at least some trichomes on the abaxial surface in the axils of the lateral veins with the midrib and in rarely having distinctive glandular fields at both the leaflet apex and in the basal lateral vein axils. Both varieties of *D. racemosa* are found in forests, *D. racemosa* var. *racemosa* in seasonally inundated forests associated with black water, and *D. racemosa* var. *translucida* in non-inundated forest.

Specimens cited in the *Flora of Ecuador* (Gentry, 1977) for *Distictella magnoliifolia* (*G. Harling & L. Andersson 11947* and *H. Lugo 3121*) pertain to *D. racemosa* var. *translucida*, and specimens cited in the *Flora de Venezuela* (Gentry, 1982) are a mixture of *D. magnoliifolia* (*P. E. Berry 1382, 1426, 1496*; *A. H. Gentry & S. Tillett 10900*; *G. Morillo et al. 3904, 3908, 4199*), *D. racemosa* var. *racemosa* (*L. Williams 15309*; *J. J. Wurdack & L. S. Adderley 43008*), and *D. racemosa* var. *translucida* (*A. H. Gentry et al. 10608*?;

G. Morillo et al. 4134 [cited as *4143*]; *J. A. Steyermark 107474*).

The specimens cited in the *Flora of Panama* (Gentry, 1973) for *Distictella magnoliifolia* (*T. B. Croat 13183*; *A. H. Gentry 737, 1861, 1882-b, 4125, 4265, 7400*) have very large membranous to subcoriaceous leaflets with the tertiary veins raised on the abaxial surface and the midrib, lateral veins, and lateral vein axils pubescent with additional tissue domatia at the axils of the lateral veins with the midrib. The same taxon is known from Costa Rica (*A. H. Gentry 1116* [MO], *71770-a* [MO], and *J. F. Morales 3212* [INB]) and is treated by Burger and Gentry (2000) as *D. magnoliifolia*. All of this material is sterile excluding parts of the valves of three old fruits, one with seeds. The fruits are broadly oblong, 15.5–23.5 × 5–5.5 cm, slightly curving, drying dull brown, pubescent with very small white trichomes, the base and apex acute, the midrib subevident, and the wall 5–7 mm thick. The seeds are ca. 22 × 90 mm, the wings poorly demarcated, light brown, membranous, hyaline especially at tips, and without irregular ridges and dots of darker color. It is uncertain what genus these specimens belong to; the absence of ridges and dots on the membranous seed wing would be unique in the genus *Distictella*.

Selected specimens examined. BRAZIL. **Amazonas:** Km 130, Manaus–Caracarai Rd. (BR 174), *A. H. Gentry 12969* (MO); Presidente Figueiredo, Represa de Balbina on Rio Uatumã, ca. 4 km NW of dam on D-1 rd., *W. W. Thomas et al. 5336* (MO). COLOMBIA. **Guainía:** Bana vegetation on white sand, near airport of San Felipe, *A. H. Gentry & B. Stein 46381* (MO). **Vaupés:** Yurupari, *P. H. Allen 3210* (MO). VENEZUELA. **Amazonas:** IVIC study area, 4 km E of San Carlos de Río Negro, *R. Liesner 3784* (MO); 8 km from San Carlos de Río Negro on rd. to Solano, *P. E. Berry 1426-a* (MO).

11. **Distictella mansoana** (DC.) Urb., Repert. Spec. Nov. Regni Veg. 14: 310. 1916. Basionym: *Bignonia mansoana* DC. in A. DC., Prodr. 9: 157. 1845. *Distictis mansoana* (DC.) Bureau ex B. Verl., Rev. Hort. 40: 154. 1868, as "*mensoana*." TYPE: Brazil. Near Cuiabá, s.d., *A. Silva Manso s.n.* (holotype, G-DC not seen, microfiche 9:157.79!).

Liana; young branchlets terete, sometimes flattened at nodes, drying dull brown, black, or gray, usually solid, densely lepidote, pilose, tomentose, or trichomes erect to ascending; trichomes dull white, ferruginous, or tan, 0.1–0.7 mm; pseudostipules rarely present, obovate or linear, thick, 3–7 × 1–1.5 mm. Leaves bifoliolate, trifid tendril sometimes present; petiole 12–63 mm, with pubescence like that of branchlets; petiolules 5–25 mm, with pubescence like that of branchlets; leaflets ovate, lanceolate, or elliptic, 5–17 × 3–12 cm, chartaceous, 3 to 6 pairs of lateral veins, each lateral vein initiating at a 20°–30°(–45°) angle with the midrib and extending toward apex before curving and anastomosing with tertiary veins, tertiary veins inconspicuous, generally anastomosing with higher order venation to form a loosely closed network, midrib and lateral veins immersed adaxially and tertiary veins usually raised, all veins raised abaxially, both surfaces drying olive-green or yellowish green, adaxial surface with trichomes dense along midrib, dense to scattered on lateral veins, and sometimes scattered over surface, abundantly lepidote, with or without scattered glands, abaxial surface pilose to tomentose with white trichomes 0.1–0.6 mm, abundantly lepidote, usually with fields of glands in the axils of the basal lateral veins with the midrib (rarely absent), and sometimes in additional axils, margin flat, base rounded, or nearly so, or subcordate (rarely somewhat acute), apex acute, short-acuminate, or obtuse-cuspidate. Inflorescence a racemose panicle (rarely raceme), peduncle with rachis 6–45 cm with 4 to 30 flowers, peduncle 2–5 mm wide at base, peduncle, rachis, and pedicels drying dull brown, black, or gray, minutely puberulent with trichomes erect to ascending, ferruginous or white, or sometimes with trichomes like those of branchlets, bracteoles 4–8 × 1–3 mm, lost before anthesis; calyx 10–15 × 9–12 mm, coriaceous, pubescent with minute, appressed, tan to ferruginous trichomes and lepidote, glandular fields 2 or 2.5 pairs; corolla white with yellow throat (corolla reportedly purple, *F. Machado & S. Assumpção S. s.n.*, SP8976), infundibular from cylindric base, curved 1/3 distance from base, 5–8.5 cm, coriaceous, tube 3.5–6.7 cm with cylindric base 9–17 mm long and mouth 17–30 mm wide, externally and internally pubescent with minute trichomes above glabrous base, internally villous at bases of stamens and staminode, lobes 13–24 × 13–25 mm; stamens and staminode inserted 8–16 mm from base of corolla tube, anthers 4–5 mm, longer filaments 24–32 mm, shorter filaments 18–26 mm, staminode 6–9 mm; disc 1–2 × 4–6.5 mm; pistil 3.7–4.9 cm, ovary 3–6 × 2–2.8 mm, stipe 0.5–1.5 mm, stigma lanceolate or subulate. Capsule elliptic or oblong, curved, 9.5–16 × 2.6–4.7 cm, 1.2–2.5 cm diam., base acute and truncate, acute, or rounded, apex obtuse, acute, or acute or obtuse and apiculate, one valve concave and the other convex, drying golden brown, densely tomentose with minute white, ferruginous, or tan trichomes, glandular and usually warty, midrib prominent, wall 2–3 mm thick. Seeds 13–20 × 38–55 mm, wings well demarcated from seed body, reddish brown with tips lighter brown, membranous, hyaline, the veins contrasting in color to surface

(Figure: Lohmann & Hopkins, 1999: 620 as *Distictella elongata*; Lohmann & Pirani, 1998: fig. 12f–l as *Distictella elongata*; Bureau & Schumann, 1896: fig. 87).

Distribution. *Distictella mansoana* has primarily been collected in central Brazil (Minas Gerais, São Paulo, Goiás, Distrito Federal, and Mato Grosso) and Bolivia (along the border with Brazil in Santa Cruz and Beni, and also La Paz). Additional collections have been found in Brazil in Bahia, Pará, Amazonas, Roraima, and Rondônia and in Peru along the border with Bolivia in Madre de Dios and Puno. It is most often reported from cerrado or pampas, but it is also reported from disturbed areas, gallery forest, and moist forest. It is generally found at elevations over 400 m, but has been collected from 160 to 1400 m elevation. Figure 1B.

Phenology. Flowering primarily from November to February. There are also collections in flower from March, May, June, August, and October; fruiting from April to November.

Discussion. Verlot (1868) published "*Distictis Mensoana*, Ed. Bur." This could be interpreted as a new species based on *J. Correa de Méllo* specimens collected in São Paulo, Brazil, and housed at P. However, digitized images of *J. Correa Mello 13* (P) were seen in this study, and the specimens were annotated by Bureau as *Bignonia mansoana* DC. and *Distictis mansoana* "Bur." From this it can be deduced that "*Mensoana*" is an orthographic error for *mansoana* and Verlot's intention was to credit Bureau with the transfer of *Bignonia mansoana* (based on *A. Silva Manso s.n.*) to *Distictis*. This transfer is often cited from later publications: *Distictis mansoana* (DC.) Bureau ex Benth. in Benth. & Hook. f., Gen. Pl. 2: 1038. 1876 or *Distictis mansoana* (DC.) Bureau, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 1893: 112. 1894.

In *Flora de Venezuela*, Gentry (1982) treated *Distictella mansoana* as a synonym of *D. elongata*. Specimens identified by Gentry as *D. elongata* are treated here as three different species, *D. elongata*, *D. mansoana*, and *D. parkeri*. However, Gentry's use of the name *D. elongata* in the descriptions and keys in the *Flora de Venezuela* (1982) and *Flora of the Venezuelan Guayana* (1997) appears to be based only on specimens of *D. parkeri*. *Distictella parkeri* differs from *D. mansoana* in the tertiary veins of the leaflets being immersed in the adaxial surface and flat to immersed on the abaxial surface, the midrib of the capsule not evident or only subevident, and the wings of the seed poorly demarcated. *Distictella elongata* differs from *D. mansoana* in having obovate leaflets with bases shortly attenuate or cuneate, the tertiary veins immersed in the adaxial surface and generally closely spaced and connecting midribs and lateral veins without branching, while the higher order venation forms a fine, closed reticulation. The fruits of *D. elongata* are somewhat smaller (ca. 8 × 2.8 cm), eglandular, and only slightly warty, and the seeds are smaller (8–10 × 25–28 mm) with poorly demarcated wings. Both *D. elongata* and *D. parkeri* are found north of *D. mansoana* in secondary or disturbed forests on white sand. Lohmann and Pirani (1998) and Lohmann and Hopkins (1999) used the name *D. elongata* for *D. mansoana*, following Gentry's (1982) synonymy and specimen identifications.

Distictella mansoana is also similar to, and sometimes confused with, *D. arenaria*. *Distictella arenaria* differs from *D. mansoana* in having conspicuous, broader, and more persistent pseudostipules (3–10 × 3–5 mm), leaflets with the tertiary veins immersed on the adaxial surface, petiolules usually longer than the petioles, capsules thinner (ca. 0.3 cm diam.) with the midrib not or only slightly evident, and seeds with the wings poorly demarcated. It is also found north of *D. mansoana* on white sand.

Distictella mansoana and *D. magnoliifolia* are the only species in the genus with the tertiary veins raised on both the adaxial and abaxial leaflet surfaces. However, the two are quite different in other aspects. *Distictella magnoliifolia* has coriaceous leaflets with the abaxial surface without trichomes and the capsules dry black, are nearly without trichomes, and have long attenuate apices.

Selected specimens examined. BOLIVIA. **Beni:** 15 km SW of Guajará–Mirim on rd. to Riberalta, *W. R. Anderson 11965* (MO). **La Paz:** Prov. Larecaja, 19 km al SO de Guanay por el camino a Tipuani, *J. C. Solomon 17685* (MO); Nor Yungas, 21.1 km al NO del camino entre Yolosa y Caranavi por el camino a Suapi (ca. 2.5 km al O de Suapi, cerca del Puente sobre el Río Suapi), *J. C. Solomon 18428* (MO). **Santa Cruz:** Velasco Prov., Parque Nacional Noel Kempff M. Pampa Grande de Bella Vista, *R. Guillén et al. 3897* (MO). BRAZIL. **Amazonas:** Reserva Florestal Ducke, Manaus–Itacoatiara, Km 26, *L. G. Lohmann et al. 70* (MO). **Bahia:** Mpio. Barreiras, Roda Velha, *G. Hatschbach 39444* (MO). **Distrito Federal:** Rio Torto, near Sobradinho, *H. S. Irwin et al. 11445* (MO); Côrrego Jeriva, E of Lagôa Paranoá, *H. S. Irwin et al. 15389* (MO). **Goiás:** Rio Cristal 44 km by rd. SE of Cristalina, *W. R. Anderson et al. 8273* (MO); Rio S. Patricio, Mun. Pirenópolis, *G. Hatschbach & T. P. Ramamoorthy 38187* (MO). **Mato Grosso:** ca. 20 km S of Xavantina, *H. S. Irwin et al. 16821* (MO); 10 km W de Chapada dos Guimarães, *S. Ferrucci 793* (MO); Porto XV, Mun. Bataguaçu, *G. Hatschbach 23542* (MO). **Minas Gerais:** ca. 40 km NE of Patrocínio, *H. S. Irwin et al. 25684* (MO); Fazenda da Ilha, Pedregulho, *A. H. Gentry et al. 59173* (MO). **Pará:** Serra do Cachimbo, 2 km W of the Cachimbo airstrip, *J. H. Kirkbride Jr. & E. Lleras 2860* (MO); Alto Tapajós, Rio Cururú, region of Missão Velha, a Mundurukú village, ca. 2 km N of the Rio Cururú, *W. R. Anderson et al. 10945* (MO).

Rondônia: Mun. de Colorado do Oeste, BR 364, Porto Velho–Cuiabá, estrada para Colorado do Oeste, Km 25, *C. A. Cid Ferreira et al. 4307* (MO); Estrada Vilhena–Pimenta Bueno entre os Kms 640 e 645, Mun. de Vilhena, *M. G. Vieira et al. 990* (MO). **Roraima:** Indian trail from Surucucu to Uaicá, betw. Maitá & Paramiteri Indian village, *G. T. Prance et al. 10659* (MO). **São Paulo:** Emas, near Cachoeira, Mun. de Piracicaba, *F. R. Fosberg 43323* (MO). PERU. **Madre de Dios:** Tambopata Prov., Río Heath, Peru/Bolivia border, *A. H. Gentry & P. Núñez 69789* (MO). **Puno:** Poto, *R. Pearce s.n.* (BM).

12. Distictella monophylla Sandwith, Mem. New York Bot. Gard. 9: 361. 1957. TYPE: Venezuela. Amazonas: Cerro Sipapo (Paráque), Camp Savanna, 1500 m, 15 Dec. 1948, *B. Maguire & L. Politi 27717* (holotype, K not seen; isotype, NY not seen, microfiche 947.A7!, digitized image!).

Shrub, erect to semi-scandent, 1–2.5 m; young branchlets terete, drying dull brown or black, solid, sometimes lepidote, densely pubescent with trichomes usually tightly appressed (rarely ascending); trichomes dull white, ca. 0.3 mm; pseudostipules absent or not seen. Leaves unifoliolate, without tendril or tendril scar; petiole 3–10 mm, pubescence like that of branchlets; leaflets oblong (rarely ovate), 3–9.5 × 1.7–7.5 cm, coriaceous, 3 to 5(6) pairs of lateral veins initiating at a 45° angle with midrib or less and extending toward apex, anastomosing with tertiary veins and fading, tertiary veins conspicuous abaxially, anastomosing with high order venation to form a fine, closed network, midrib and lateral veins usually flat adaxially and tertiary veins raised, occasionally tertiary veins flat or all immersed, all raised abaxially (except sometimes flat in young leaflets), both surfaces drying blackish green (rarely pale green), adaxial surface with scattered, appressed trichomes, or trichomes restricted to main veins, or without trichomes, scattered lepidote, sometimes with scattered glands, and glands concentrated at apex and/or base, abaxial surface with small, straight white trichomes along (and sometimes on) veins and veinlets, generally pointing into areoles (sometimes also in areoles), lepidote, without obvious glands, margin revolute, base rounded or subcordate, apex rounded or obtuse, often apiculate, sometimes emarginate. Inflorescence a raceme (rarely racemose panicle), peduncle with rachis 2–4.5 cm with 1 to 6(20) flowers, peduncle 1–2 mm wide at base, peduncle, rachis, and pedicels drying gray, pubescent with trichomes like those of stem, bracteoles absent or not seen; calyx 6–8 × ca. 7 mm, membranous, pubescent with minute white, appressed trichomes, glandular fields 2 to 3.5 pairs; corolla white, pale purple, or white with purple lobes, sometimes with yellow throat, infundibular from cylindric base, weakly curved ca. 1/2 distance from base, 4.5–6 cm, membranous, tube 3.6–4.1 cm with cylindric base 5–8 mm long and mouth 15–20 mm wide, externally densely puberulent with minute trichomes above glabrous base, internally puberulent and lepidote with villous clusters of trichomes at bases of stamens and staminode, lobes 10–15 × 10–15 mm; stamens and staminode inserted 4.5–8 mm from base of corolla tube, anthers 3.5–4 mm, longer filaments 22–23 mm, shorter filaments 17–18 mm, staminode 2–3 mm; disc 1–2 × 2.5–4 mm; pistil 3–3.3 cm, ovary 2.5–3 × ca. 1.2 mm, stipe not distinct, stigma lanceolate. Capsule elliptic, not curved, 4.2–7 × 2–2.6 cm, ca. 0.2–0.3 cm diam., base rounded, apex attenuate, valves compressed, drying brown, or grayish or greenish brown, densely puberulent with minute, white trichomes, scattered glands, often with granular appearance, midrib not evident, wall 1–1.5 mm thick. Seeds 10–15 × 23–32 mm, wings well demarcated from seed body, reddish brown with tips yellowish tan, membranous, hyaline at least at tips, the veins contrasting in color to surface.

Distribution. *Distictella monophylla* is known from Amazonas, Venezuela, and (reported by Sandwith, 1957) from adjacent areas in Colombia. It is often found in white sand savannas, between 100 and 1500 m. Figure 1A.

Phenology. Flowering February, March, May–July, November, and December; fruiting February, March, July, and October.

Discussion. The only other species of *Distictella* known to have unifoliolate leaves is *D. laevis* (first pair of leaves sometimes unifoliolate in *D. campinae*). These are also the only two species of *Distictella* that are ever erect shrubs. They differ from each other primarily in the abaxial surface of the leaves, without trichomes in *D. laevis* with the tertiary veins immersed to flat and loosely open-reticulate and the margin flat. Their geographic ranges and habitats overlap, but *D. laevis* has not been collected above 400 m.

Leaves of *Distictella monophylla* are similar to the leaflets of the bifoliolate liana, *D. obovata*. However, the species differ not only in habit and leaflet number but also leaflet shape (generally obovate or oblanceolate in *D. obovata*), base (cuneate in *D. obovata*), surface drying color (bicolored and glossy adaxially in *D. obovata*), and capsule drying color (dull black in *D. obovata*).

Selected specimens examined. VENEZUELA. **Amazonas:** Savanna and forest edge just S of Budare, on S bank of upper Río Temi, 15.3 km (air) SW of Yavita, *P. E. Berry et al. 6173* (MO); Dpto. Atabapo, Alto Río Orinoco, 15 km al W de La Esmeralda, Cerro Baraco, *G. Aymard & L. Delgado 8383* (MO); Dpto. Atures, 10 km al S de Río Autana y 15 km al SW del Cerro Autana, *O. Huber 4061* (MO); Dpto. Río

Negro, vertiente oriental del Macizo Aracamuni, *O. Huber & E. Medina 5892* (MO).

13. **Distictella obovata** Sandwith, Mem. New York Bot. Gard. 9: 362. 1957. TYPE: Guyana. Upper Mazaruni River, Kataima, 500 m, 17 Nov. 1951, *B. Maguire & D. B. Fanshawe 32637* (holotype, K not seen; isotype, NY not seen, microfiche 947/A9!, digitized image!, US not seen, digitized image!).

Liana; young branchlets terete, drying black (rarely brown-green), solid, lepidote, pubescent with trichomes appressed to spreading; trichomes white-translucent, 0.1–0.3 mm; pseudostipules rarely present, subulate or clavate, 4–6 × 0.5–1 mm. Leaves bifoliolate, trifid tendril sometimes present; petiole 3–15 mm, with pubescence like that of branchlets; petiolules 6–12 mm, with pubescence like that of branchlets; leaflets obovate or oblanceolate (rarely elliptic), 2.8–9(11.2) × 1.5–4(4.8) cm, coriaceous, 3 or 4(5) pairs of lateral veins, each lateral vein initiating at a 45° angle with the midrib and curving toward the apex before fading, tertiary veins conspicuous, but not always distinct from higher orders of venation, strongly reticulate with higher order venation forming a fine, closed network, all veins immersed adaxially and raised abaxially, adaxial surface drying glossy, black or brown-green, generally without trichomes or nearly so except along midrib (and sometimes trichomes scattered on surface), scattered lepidote, usually without glands, abaxial surface grayish brown-green or grayish yellow-green, with covering of small white-translucent trichomes erect then curving primarily in areoles (rarely evenly distributed), scattered lepidote, without glands, or glands scattered in basal area (rarely concentrated into fields), margin recurved, base cuneate, apex rounded, rounded and apiculate (rarely obtuse and cuspidate). Inflorescence a raceme, peduncle with rachis 15–20 cm with ca. 10 flowers, peduncle ca. 2 mm wide at base, peduncle, rachis, and pedicels drying black, pubescent with trichomes like those of branchlets, bracteoles absent or not seen; calyx 8–10 × 9–10 mm, membranous, pubescent with minute, white, appressed trichomes and lepidote, glandular fields 2 or 2.5 pairs; corolla white with yellow throat, infundibular from cylindric base, curved 1/3 distance from base, (4–)6.5–7 cm, chartaceous, tube (3.5–)5 cm with cylindric base 8–15 mm long and mouth (10–)15–25 mm wide, externally and internally densely pubescent with minute trichomes above glabrous base (or rarely internally lepidote), internally with villous clusters of trichomes at bases of stamens and staminode, lobes 15–20 × 15–22 mm; stamens and staminode inserted 7–10 mm from base of corolla tube, anthers 3–4 mm, longer filaments 20–24 mm, shorter filaments 16–20 mm, staminode 5–6 mm; disc ca. 2 × 4 mm; pistil ca. 3.7 cm, ovary ca. 4 × 2.5 mm, stipe not distinct, stigma lanceolate. Capsule narrow-elliptic, not curved, (4–)8–9 × (1.8–)2.8–3 cm, ca. 0.4 cm diam., base acute and truncate, apex acuminate, both valves somewhat compressed, drying dull black, pubescent with minute, appressed, white trichomes, very warty and somewhat wrinkled, midrib subevident, capsule splitting along midrib at maturity, wall 1.5–2 mm thick. Seeds (8–)10–18 × 30–40 mm, wings poorly demarcated from seed body, reddish brown with tips lighter, membranous, hyaline, especially at tips, the veins contrasting in color to surface.

Distribution. *Distictella obovata* is known from the region of the Pakaraima Mountains of Guyana, and across the border into Bolívar, Venezuela. It is found in savannas and disturbed or low forests from 450–1660 m elevation. Figure 1A.

Phenology. Flowering May, June, and October; fruiting May.

Discussion. Leaflets of *Distictella obovata* strongly resemble the leaves of *D. monophylla* in venation, pubescence, margin, and apex, and Sandwith (1957) suggested that *D. obovata* might prove to be a scandent bifoliolate form of the simple-leaved, shrubby *D. monophylla*. However, the two species vary not only in leaflet number and in habit but also leaflet shape (oblong or ovate in *D. monophylla*), base (rounded or subcordate in *D. monophylla*), surface drying color (both surfaces similar in *D. monophylla*), and capsule color (brown in *D. monophylla*). *Distictella monophylla* is endemic to Amazonas, Venezuela, and adjacent areas in Colombia (Sandwith, 1957) and is found in white sand savannas.

Sandwith (1957) also compared *Distictella obovata* to *D. cuneifolia* based on their similar leaflet shapes. *Distictella cuneifolia* has leaflets without trichomes and with more lateral veins (5 to 7 pairs), the higher order venation flat to immersed in the abaxial surface, and a generally flat margin and reddish brown capsules with a prominent midrib. *Distictella cuneifolia* is endemic to Bolivia where it is found in pampas or savannas with black, silty soil.

The shape of the leaflets of *Distictella obovata* and *D. elongata* can be similar, and these specimens are frequently misidentified. The leaflets of *D. elongata* are chartaceous to subcoriaceous, tomentose on the abaxial surface, the margin always flat, and the lateral veins at a steep (20°) angle. In addition, the inflorescence is paniculate and the fruits are golden-brown, curved, and have a prominent midrib. *Distictella* *elongata* is also found at lower elevations (sea level to 200 m), east of the range of *D. obovata*, in secondary forests growing on white sand.

Selected specimens examined. GUYANA. Pakaraima Mtns., Mt. Aymatoi, *P. J. M. Maas et al. 5711* (MO); Pakaraima Mtns., Mora forest, N of Kamarang, *P. J. M. Maas et al. 4307* (MO); upper Mazaruni River basin, Merume Mtns., Imbaimadai savannahs, near mouth of Partang River, *S. S. Tillett & C. L. Tillett 43837* (MO); Cuyuni–Mazaruni Region, vic. of Utshe River, *T. McDowell & D. Gopaul 2864* (MO). VENEZUELA. **Bolívar:** Quebrada El Cajón, Puente Luis Raúl Vásquez Z., 26.5 km E de Icabarú, *J. A. Steyermark et al. 117818* (MO); Distr. Piar, Río Aparamán, Kambay-merú rapids, ca. 3 km SE of SSE corner Amaruay tepui, *R. Liesner & B. Holst 20668* (MO).

14. **Distictella parkeri** (DC.) Sprague & Sandwith, Bull. Misc. Inform. Kew 1932: 90. 1932. Basionym: *Bignonia parkeri* DC. in A. DC., Prodr. 9: 157. 1845. TYPE: Guyana. Demerara, 1826, *Parker s.n.* (holotype, G-DC not seen, microfiche G-DC 9.157.80!, photo F neg. 7637!).

Distictis guianensis Klotzsch ex Bureau & K. Schum. in Mart., Fl. Bras. 8(2): 176. 1896; *Distictella guianensis* (Klotzsch ex Bureau & K. Schum.) Urb., Repert. Spec. Nov. Regni Veg. 14: 310. 1916. TYPE: Guyana. Banks of Demerara River, s.d., *M. R. Schomburgk 1709* (holotype, B presumed destroyed).

Liana; young branchlets terete, flattened at nodes, drying brownish green to dull brown, usually hollow, lepidote, densely pubescent with trichomes ascending; trichomes dull white or ferruginous, to 0.06–0.1 mm; pseudostipules rarely present, falcate or clavate, thick, 4.5–8 × 2–4 mm. Leaves bifoliolate, trifid tendril sometimes present; petiole 13–35(50) mm, with pubescence like that of branchlets; petiolules 13–25 mm, with pubescence like that of branchlets; leaflets ovate, obovate, or elliptic-oblong, 9.7–22.3 × 4.8–12.5 cm, subcoriaceous (rarely chartaceous or coriaceous), 4 to 6 pairs of lateral veins, each lateral vein initiating at a 45° angle with the midrib and curving toward the apex, anastomosing with tertiary veins and fading, tertiary veins inconspicuous, weakly connecting midrib and lateral veins and loosely reticulate with higher order venation, all veins immersed adaxially, midrib and lateral veins raised abaxially, tertiary veins flat to immersed, adaxial surface drying brown-green, brownish yellow-green, or dark brownish green, without trichomes except for midrib and sometimes lateral veins (rarely scattered trichomes on surface), abundantly lepidote, usually with scattered glands, abaxial surface drying brownish green, brownish yellow-green, or grayish yellow-green, densely tomentose with white trichomes to 0.15 or 0.2 mm, abundantly lepidote, with fields of glands in the axils of the basal lateral veins with the midrib, often also some scattered glands especially at apex, margin flat, base rounded, subcordate, or cordate, apex obtuse and cuspidate (rarely apiculate or rounded and apiculate). Inflorescence a racemose panicle, peduncle with rachis 15–35 cm with 17 to 34 flowers, peduncle 3–4 mm wide at base, peduncle, rachis, and pedicels drying dull brown or brownish green, pubescent with trichomes like those of branchlets or trichomes smaller, bracteoles 2–5 × ca. 1 mm, lost prior to anthesis; calyx 10–13 × 10–11 mm, coriaceous, pubescent with minute, ferruginous or white, appressed trichomes and lepidote, glandular fields 2 pairs; corolla white with yellow throat, infundibular from cylindric base, curved 1/4–1/2 distance from base, 5.5–8 cm, subcoriaceous, tube 4.3–6 cm with cylindric base 10–13 mm long and mouth 20–25 mm wide, externally and internally densely pubescent with minute trichomes above glabrous base, internally with villous clusters of trichomes at bases of stamens and staminode, lobes 12–20 × 13–20 mm; stamens and staminode inserted 8–10 mm from base of corolla tube, anthers 4–5 mm, longer filaments 23–29 mm, shorter filaments 19–23 mm, staminode 2–6 mm; disc ca. 1.5 × 4–5.2 mm; pistil 3.9–4.6 cm, ovary 4–4.2 × 1.5–2.5 mm, stipe 0.5–1.5 mm, stigma lanceolate. Capsule oblong, strongly curved, 12–12.5 × 3.5–3.6 cm, ca. 1.3 cm diam., base acute and truncate, apex acute or acute and rounded, with one valve concave and the other convex, drying reddish brown or golden, densely pubescent with trichomes like leaflets or golden or red, with numerous glands overall or glands numerous but restricted to margins, warty or granular (sometimes only on margins), midrib not at all or only subevident, capsule sometimes splitting along midrib at maturity, wall 2–4 mm thick. Seeds 15–20 × 55–62 mm, wings poorly demarcated from seed body, reddish brown with tips lighter brown, membranous, hyaline, the veins contrasting in color to surface (Figure: Gentry, 1997: fig. 375, as *Distictella elongata*).

Distribution. *Distictella parkeri* is known from the Guianas, Bolívar, Venezuela, and Amapá, Brazil. It is generally found in disturbed forest, often described as on white sand, at elevations between sea level and 500 m. Figure 1B.

Phenology. Flowering January, March, June, September, October, and December; fruiting March and May.

Discussion. Sprague and Sandwith (1932) studied the holotype of *Distictis guianensis* and treated *D. guianensis* as a synonym of *Distictella parkeri*. This placement, which is supported by the original description of *Distictis guianensis* (Bureau & Schumann, 1896), is followed here.

Distictella parkeri is treated in the *Flora of Venezuela* (Gentry, 1982; based on *A. H. Gentry et al. 10660* and *J. A. Steyermark 90641*, not seen) and the *Flora of the Venezuelan Guayana* (Gentry, 1997) as *D. elongata*, a species that has leaflets with attenuate or cuneate bases, lateral veins at a steep (20°) angle to the midrib, abaxial surfaces with a raised and finely closed network of veins, and capsules with a prominent midrib.

Distictella parkeri is closest to *D. lohmanniae*, which differs in having leaflets that are bicolored, the adaxial surface drying dark blackish green, the abaxial surface covered with appressed, minute trichomes to 0.03 mm long, lateral veins forming a steep (20°) angle with the midrib, tertiary veins generally parallel, closely set, and nonbranching, smaller inflorescences (peduncle with rachis 6–11 cm), slightly curved fruit with a prominent midrib, and seeds with the wings well demarcated. *Distictella lohmanniae* is endemic to Amazonas, Brazil.

Another similar species is *Distictella mansoana*, treated by Gentry as a synonym of *D. elongata* (Gentry, 1982). *Distictella mansoana* differs from *D. parkeri* in the tertiary veins of the leaflets being usually raised on both surfaces, the very elevated and swollen midrib of the capsule, and the well-demarcated wings of the seeds. *Distictella mansoana* is distributed south of *D. parkeri*.

Distictella parkeri can also be compared with *D. racemosa* var. *translucida*. The latter has the abaxial surface of the leaflets generally with trichomes restricted to the axils of the lateral veins with the midrib and occasionally with trichomes also on the major veins, or rarely without trichomes, capsules with a prominent midrib, and leaflet bases acute, obtuse, or rounded.

Selected specimens examined. BRAZIL. **Amapá:** Mun. de Calçoene, BR156 in vic. of government rd. camp Carnot, 53–72 km WNW of Calçoene, *B. V. Rabelo et al. 2858* (MO). FRENCH GUIANA. Cayenne–Regina hwy., 5–6 km N of crossing of Riviere La Comte, *A. H. Gentry & E. Zardini 50256* (MO); Bord de la rte. de l'Est, Km 38, *M.-F. Prévost 428* (MO). GUYANA. Cuyuni–Mazaruni Region, along Mazaruni River, confluence with Kamarang River to ca. 3 km upstream, *T. McDowell & D. Gopaul 2575* (MO); upper Demerara–Berbice Region, Fairview Landing E bank of Essequibo River, near end of Mabura rd., *T. McDowell 3250* (MO); West-Demerara, Mabura Hill, 180 m SSE of Georgetown, Mabura main rd., *H. ter Steege et al. 398* (MO); Potaro–Siparuni Region, Kaieteur Natl. Park, betw. airstrip & escarpment, *L. J. Gillespie 902* (MO). SURINAME. **Marowijne Distr.:** Vic. of Patamacca Village, 25 km S of Moengo, *B. Hoffman & M. van Roosmalen 5355* (MO). VENEZUELA. **Bolívar:** Tumeremo to Anacoco (N side of Cuyuni River), 61 km from Guyana frontier at Anacoco, *A. H. Gentry et al. 10660* (MO).

15. **Distictella pauciflora** A. H. Gentry, Ann. Missouri Bot. Gard. 61: 872. 1974. TYPE: Venezuela. Bolívar: Región de Canaima, entre el hotel y el Salto Hacha, 400 m, 6°15′N, 62°47′W, 18 July 1972, *J. A. Steyermark 106343* (holotype, MO!).

Liana; young branchlets terete, drying grayish green, solid, densely lepidote, pubescent with appressed trichomes or glabrescent; trichomes dull white, to 0.03 mm; pseudostipules absent. Leaves bifoliolate, tip of tendril not seen; petiole 8–20 mm, with dense, white and ferruginous trichomes to 0.03 mm, lepidote; petiolules 4–7 mm, with pubescence like that of petioles; leaflets elliptic or lanceolate-elliptic, 5.5–13 × 1.4–4.2 cm, subcoriaceous, 4 to 7 pairs of lateral veins, each lateral vein initiating at a 45° angle with the midrib and curving toward the apex, anastomosing with tertiary veins and fading, tertiary veins inconspicuous, connecting midrib and lateral veins and weakly reticulate with higher order venation forming a loosely closed network, all veins immersed adaxially, midrib and lateral veins raised, and tertiary veins flat to immersed abaxially, both surfaces drying brownish green, adaxial surface, without trichomes, abundantly lepidote, without scattered glands, abaxial surface without trichomes, densely lepidote, with scattered glands, glandular fields sometimes in basal lateral vein axils with midrib, margin flat, base cuneate, apex long-acuminate. Type with one terminal flower and one flower from axil of uppermost leaf, peduncle with pedicel 2.5–5 cm, peduncle ca. 1 mm wide at base, peduncle and pedicels drying grayish green, pubescent with trichomes like branchlets, bracteoles absent or not seen; calyx 8–9 × 7–8 mm, coriaceous, pubescent with scattered minute, ferruginous, appressed trichomes and densely lepidote, glandular fields at least 1 pair; corolla white with pale lavender lobes, infundibular from cylindric base, curved 1/4 distance from base, 5–6 cm, chartaceous, tube 3.5–4.5 cm with cylindric base ca. 10 mm long and mouth 13–18 mm wide, externally densely pubescent with minute trichomes above glabrous base, internally densely pubescent apically, less so basally with villous clusters of trichomes at bases of stamens and staminode, lobes 13–20 × 13–20 mm; stamens and staminode inserted 7–10 mm from base of corolla tube, anthers ca. 4 mm, longer filaments 19–21 mm, shorter filaments 17–19 mm, staminode at least 2 mm (broken); disc ca. 1 × 3 mm; pistil 3.6–3.7 cm, ovary ca. 4 × 1.5 mm, stipe ca. 1 mm, stigma lanceolate. Capsule not known.

Distribution. *Distictella pauciflora* is known only from the type (Bolívar, Venezuela). Figure 1B.

Phenology. Flowering July; fruiting not known.

Discussion. *Distictella pauciflora* is most similar to narrow-leaved specimens of *D. racemosa* var. *racemosa* (such as the types of its synonyms *Bignonia rusbyi* Britton ex Rusby and *Distictis angustifolia*) but differs from these in its greatly reduced and delicate inflorescence. *Distictella pauciflora* is unusual in this generally white-flowered genus in having lavender corolla lobes, though *D. monophylla* is frequently described as having pale purple corollas (at least in part), one specimen of *D. racemosa* var. *translucida* was reported to have corollas with lavender lobes, and one specimen of *D. mansoana* was described as having purple corollas. Curiously, the illustration in the *Flora of the Venezuelan Guayana* (Gentry, 1997) depicts a plant with an elongate raceme with at least seven flowers. It is possible that *D. pauciflora* is a depauperate specimen of *D. racemosa.*

16. Distictella porphyrotricha Sandwith, Bol. Soc. Venez. Ci. Nat. 25(106): 48. 1963. TYPE: Venezuela. Bolívar: Río Cuyuni drainage, 135 km S of El Dorado, NE of Luepa, 800–1200 m, 6–11 Mar. 1962, *J. A. Steyermark & L. Aristeguieta 98* (holotype, K not seen; isotypes, NY not seen, microfiche 947/A11!, digitized image!, US not seen, digitized image!).

Liana; young branchlets terete, drying dark red, solid, pubescent with erect to spreading trichomes; trichomes ferruginous, the longest 1.5–2 mm; pseudostipules occasionally present, falcate, thick, 2.5–3 × 1–1.2 mm. Leaves bifoliolate, trifid tendril usually present; petiole 3–10 mm, with pubescence like that of branchlets; petiolules 7–20 mm, with pubescence like that of branchlets; leaflets elliptic to oblanceolate, 4–12.5 × 2–8.4 cm, subcoriaceous to coriaceous (sterile specimens sometimes chartaceous), 4 to 6(7) pairs of lateral veins, each lateral vein initiating at a 45° angle with the midrib and curving toward the apex before anastomosing with the tertiary veins and fading, tertiary veins conspicuous, anastomosing with the higher order venation to form a loosely closed network, all veins immersed adaxially and raised abaxially, both surfaces drying brownish green, adaxial surface bullate (not always so in sterile collections), with red, erect trichomes, 0.8–2 mm, dense to scattered on main veins and scattered on surface, scattered lepidote, without glands, abaxial surface with dense, white or red trichomes, 0.6–1.5 mm, erect to spreading, or pilose, abundantly lepidote, without visible glands, margin recurved, base rounded, subcordate, or cuneate, apex obtuse or rounded, apiculate (sometimes on sterile collections long attenuate, or cuspidate). Inflorescence a raceme or racemose panicle, peduncle with rachis 4.5–12 cm with 10 to 20 flowers, peduncle 3–4 mm wide at base, peduncle, rachis, and pedicels drying reddish brown to dark reddish purple, pubescent with trichomes like branchlets, or trichomes smaller and ascending, bracteoles 2–5 × 1–1.5 mm, usually present in flower; calyx 8–14 × 6–14 mm, subcoriaceous, pubescent with dense, red, spreading to ascending or appressed trichomes to 0.3 mm, glandular fields 2.5 pairs; corolla white with yellow throat, infundibular from cylindric base, curved 1/5–1/3 distance from base, 4–5.3 cm, subcoriaceous, tube 3–4 cm with cylindric base 10–13 mm long and mouth 15–20 mm wide, externally and internally densely pubescent with minute trichomes above glabrous base, internally with villous clusters of trichomes at bases of stamens and staminode, lobes 8–18 × 12–19 mm; stamens and staminode inserted 8–12 mm from base of corolla tube, anthers 4–5 mm, longer filaments 21–24 mm, shorter filaments 16–21 mm, staminode 5–7 mm; disc 1–2 × 3.5–6 mm; pistil 3.1–4.5 cm, ovary 3–4 × 2–2.5 mm, stipe 0.5–1 mm (rarely absent), stigma subulate or rhombic. Capsule obovate-oblong, not curved, ca. 12 × 3.7 cm, base obtuse, apex acuminate, both valves slightly compressed, densely pubescent with ferruginous trichomes, with few scattered glands, midrib inconspicuous, capsule splitting along midrib at maturity. Seeds ca. 20 × 40 mm, wings poorly demarcated from seed body, brown, membranous.

Distribution. *Distictella porphyrotricha* is known from eastern Bolívar, Venezuela, and Amapá, Brazil. It is generally reported from forests on terra firme at elevations between 900 and 1380 m. Figure 2A.

Phenology. Flowering January and March; fruiting May.

Discussion. Fruiting material was not seen in this study; the description here is based on Sandwith (1963), Gentry (1982), and notes by Gentry on the MO photocopy of the K photo *T. Lasser 1793* (VEN).

The only other species of *Distictella* with such long trichomes as *D. porphyrotricha* (1.5–2 mm long) on branchlets, petioles, petiolules, peduncle, and pedicels is *D. dasytricha* (trichomes 1–2 mm long). The other species have trichomes on these parts ranging in length from 0.03–0.7 mm. *Distictella dasytricha* differs from *D. porphyrotricha* most markedly in its leaflets, which are non-bullate and have a fine, closed network formed by the higher order venation. *Distictella dasytricha* also has lateral veins that diverge from the midrib at a much steeper angle (20°), golden-colored trichomes on the branchlets, petioles, petiolules, and inflorescences, bracteoles that are lost prior to anthesis, and capsules that are curved, smaller (6.8–7.5 cm), with an obtuse to rounded apex and prominent midrib, and it is found at lower elevations (ca. 240 m), often in swamp forests.

Additional specimens examined. BRAZIL. **Amapá:** Mun. de Mazagão, margem esquerda do rio Jarí, morro do Filipe III, *M. J. P. Pires et al. 819* (MO), *819-a* (MO). VENEZUELA. **Bolívar:** Alrededor del Km 123, carr. El Dorado–Santa Elena de Uairen, *L. Marcano-Berti et al. 101-981* (MO); Km 122 S of El Dorado, *A. H. Gentry et al. 10571* (MO); Km 133 S of El Dorado, *A. H. Gentry et al. 10565* (MO); 17 km E of El Pauji by rd. & 64 km W of Santa Elena by rd. 4 km N of hwy., Río Las Ahallas, *R. Liesner 19154* (MO); Gran Sabana, ca. 10 km SW of Karaurin Tepui at jct. of Río Karaurin & Río Asadon (Río Sanpa), *R. Liesner 23864* (MO); Gran Sabana, selva de galleria a lo largo de las cabeceras del Río Pacairao, 6 km al N de la Misión de Santa Teresita de Kavanayén, *J. A. Steyermark et al. 115553* (MO); Kavanayén, *T. Lasser 1793* (MO, photocopy of K's photo of sheet at VEN).

17. **Distictella racemosa** (Bureau & K. Schum.) Urb., Repert. Spec. Nov. Regni Veg. 14: 310. 1916. Basionym: *Distictis racemosa* Bureau & K. Schum. in Mart., Fl. Bras. 8(2): 179. 1896. TYPE: Suriname. Wanica River, s.d., *H. R. Wullschlaegel 1033* (lectotype, designated here, BR 880400 not seen, digitized image!).

Liana; young branchlets terete, the nodes swollen or flattened, drying dull reddish brown, black, or grayish yellow-green, solid (rarely hollow), densely lepidote, pubescent with appressed trichomes or glabrescent; trichomes dull white or ferruginous, to 0.05 mm; pseudostipules rarely present, oblong to elliptic, thick, 3–6 × 1.5–4 mm. Leaves bifoliolate, trifid tendril sometimes present; petiole 7–50 mm, with pubescence like that of branchlets; petiolules 5–25 mm, with pubescence like that of branchlets; leaflets elliptic, 8–20 × 3.3–11.5 cm, membranous to subcoriaceous, (4)5 to 9 pairs of lateral veins, each lateral vein initiating at a 20°–60° angle with the midrib and curving toward the apex before anastomosing with the tertiary veins and fading, tertiary veins inconspicuous, connecting midrib and lateral veins and weakly reticulate with higher order venation forming a loosely closed network, all veins immersed to flat adaxially, midrib raised, lateral veins raised to flat, and tertiary veins immersed abaxially, both surfaces drying brownish green or yellow-green, adaxial surface without trichomes or midrib with minute appressed trichomes, abundantly lepidote, sometimes with scattered glands, abaxial surface with axils of lateral veins with midrib puberulent or pilose, sometimes with additional trichomes on midrib, or without trichomes, abundantly lepidote, sometimes with glandular fields at apex and/or in basal lateral vein axils with midrib, and sometimes with scattered glands, margin flat, base acute, obtuse, or rounded, apex acuminate, or rounded or obtuse and cuspidate or apiculate. Inflorescence a racemose panicle or raceme, sometimes lateral, peduncle with rachis 7–40 cm with 3 to 30 flowers, peduncle 2–6 mm wide at base, peduncle, rachis, and pedicels drying grayish yellow-green, reddish brown, brown, or black, pubescent with trichomes like branchlets, bracteoles absent or not seen; calyx 6–15 × 6–12 mm, coriaceous, pubescent with minute, ferruginous or dull white, appressed trichomes and lepidote, glandular fields 2 to 5 pairs; corolla white (rarely pale lavender) with yellow throat, infundibular from cylindric base, curved 1/5–1/2 distance from base, 4.2–8 cm, membranous to coriaceous, tube 3–6 cm with cylindric base 7–15 mm long and mouth 16–25 mm wide, externally and internally densely pubescent with minute trichomes above glabrous base, internally with villous clusters of trichomes at bases of stamens and staminode, lobes 10–25 × 13–25 mm; stamens and staminode inserted 6–15 mm from base of corolla tube, anthers 3–5 mm, longer filaments 20–30 mm, shorter filaments 15–22 mm, staminode 2–9 mm; disc 1–2 × 3–6 mm; pistil 3.4–5 cm, ovary 3–6 × 1–3 mm, stipe 0.5–1 mm (rarely absent), stigma ovate or subulate. Capsule broadly elliptic, oblong, or oblanceolate, curved or not, 8–22 × 3.5–7 cm, 0.5–4.5 cm diam., base acute, obtuse, or rounded and truncate, apex acute, rounded, obtuse, or obtuse and apiculate, both valves convex to slightly compressed or one valve concave and the other convex, drying dull grayish yellow-green or reddish brown, densely pubescent with minute, appressed white or ferruginous trichomes, with or without glands, granular or not, midrib not evident to prominent, capsule sometimes splitting along midrib at maturity, wall 3–5 mm thick. Seeds 15–28 × 24–85 mm, wings poorly to well demarcated from seed body, brown or gray, or reddish brown with tips yellowish brown, subcoriaceous to coriaceous or membranous, opaque or hyaline, the veins contrasting in color to surface or not.

Distribution. *Distictella racemosa* is known from northern South America to southern Peru, northern Bolivia, and Amazonian Brazil. It is usually found in forests between sea level and 850 m. Figure 2B.

Phenology. Flowering and fruiting throughout the year.

Discussion. Bureau and Schumann (1896) cited two specimens, *H. R. Wullschlaegel 1033* and *C. F. Martius s.n.* as *Distictis racemosa.* Images of two specimens of *H. R. Wullschlaegel 1033* at BR were seen, and the sheet barcoded BR 880400 was annotated by Schumann and is therefore selected here as the lectotype. The duplicate barcoded BR 880502 was apparently not annotated by Bureau or Schumann and is better considered an isosyntype. The *Martius* collection (barcoded M-88916) also does not appear to be annotated by Bureau or Schumann and may, at best, be considered an isosyntype.

Gentry (1973, 1977, 1982, 1997) and Burger and Gentry (2000) treated *Distictella racemosa* as a synonym of *D. magnoliifolia*, a synonymy that was suggested by Sandwith (1954). Earlier, Sandwith (1953) had recommended that the two be kept as separate species, emphasizing the elevated tertiary leaf venation and the large distinctive glandular fields at the apex and base of the leaflets of *D. magnoliifolia*. Gentry (1973) found both these characters to be variable and inadequate for specific separation. In the current study, the venation character was found to be consistent, but the glandular field character was not reliable. The leaflets of *D. magnoliifolia* are quite distinct from those of *D. racemosa*. They are heavily coriaceous with only two to four pairs of lateral veins that curve up toward the apex of the leaflet but follow the margin for a considerable distance before fading out. The capsules of *D. magnoliifolia* are very different from those of *D. racemosa*: they are narrowly oblong (8–13.5 × 2–2.5 cm), with a long attenuate apex, with few scattered and minute trichomes, dry black, and have a thin wall (1–2 mm). In addition, the habitat is different. *Distictella magnoliifolia* is found in scrubby or low forests on white sand. *Distictella magnoliifolia* is further separated from *D. racemosa* var. *racemosa* by its curved capsules and membranous and hyaline seed wings.

Two varieties of *Distictella racemosa* are recognized in this study: *D. racemosa* var. *racemosa*, which is found in seasonally inundated forests below 200 m elevation and has seeds with the wings opaque and subcoriaceous to coriaceous and fruits not curved, with both valves convex to slightly compressed; and *D. racemosa* var. *translucida*, which is found in non-inundated forests between 100 and 950 m elevation and has seeds with the wings membranous and hyaline and fruits usually curved with one valve convex and one concave. The two varieties are very difficult to separate when fruits are not present. *Distictella racemosa* var. *racemosa* is always totally without trichomes on the abaxial surface of the leaflets and nearly always has glands at the leaflet apex and in the axils of the basal lateral veins. *Distictella racemosa* var. *translucida* often has trichomes in the axils of the lateral veins with the midrib and rarely has glandular fields in both the basal lateral vein axils and at the apex. In addition, the lateral veins of *D. racemosa* var. *translucida* are often at a steeper angle (20°–40°) than those of *D. racemosa* var. *racemosa* (45°–60°). Unfortunately, as the types of the pertinent names are flowering collections and the habitats are not indicated, the names are applied with some uncertainty.

17a. **Distictella racemosa** (Bureau & K. Schum.) Urb. var. **racemosa**. Figure 3D, E.

Bignonia rusbyi Britton ex Rusby, Bull. Torrey Bot. Club 27: 71. 1900. Syn. nov. TYPE: Bolivia. Jct. of rivers Beni & Madre de Dios, Aug. 1886, *H. H. Rusby 1140* (holotype, NY not seen, digitized image!; isotypes, MICH not seen, MO!).

Distictis angustifolia K. Schum. ex Sprague, Verh. Bot. Vereins Prov. Brandenburg 1908: 120. 1908 [1909]. Syn. nov. *Distictella angustifolia* (K. Schum. ex Sprague) Urb., Repert. Spec. Nov. Regni Veg. 14: 310. 1916. TYPE: Brazil. Amazonas: Marmellos, Rio Madeira, Mar. 1902, *E. Ule 6111* (holotype, presumed at B not seen, F neg. 18440!; isotypes, HB not seen, K not seen, photo neg. 4218 not seen, photocopy!, L not seen, MG not seen).

Distictella lutescens C. V. Freire & A. Samp. in A. Samp & C. V. Freire, Ann. Acad. Brasil. Sci. 8(1): 31. 1936. Syn. nov. TYPE: Brazil. Amazonas: Santa Isabel (Rio Negro), 8 Nov. 1932, *A. Ducke 8022-a* (holotype, R 28725 [as "R 28726"] not seen; isotype, RB 24885!).

Distictella negrensis C. V. Freire & A. Samp. in A. Samp. & C. V. Freire, Ann. Acad. Brasil. Sci. 8(1): 30. 1936. Syn. nov. TYPE: Brazil. Amazonas: Santa Isabel (Rio Negro), margem do rio, 8 Nov. 1932, *A. Ducke 8022* (holotype, R 28726 [as "R 28725"] not seen; isotype, RB 8022!).

Liana; young branchlets terete, the nodes usually swollen (rarely flattened). Leaflets with lateral veins initiating at a 45°–60° angle with the midrib, abaxial surface without trichomes, usually with glandular fields at apex and in axils of basal lateral veins with midrib. Calyx glandular fields 2 to 5 pairs. Capsule broadly elliptic, oblong, or oblanceolate, not curved, 8–16 × 3.5–7 cm, 0.5–4.5 cm diam., base acute, obtuse, or rounded and truncate, apex acute, rounded, obtuse, or obtuse and apiculate, both valves convex to slightly compressed, drying dull grayish yellow-green or reddish brown, densely pubescent with minute, appressed, white or ferruginous trichomes, usually with abundant glands, often granular, midrib not evident to evident, capsule often splitting along midrib at maturity. Seeds 15–28 × 24–45 mm, wings poorly demarcated from seed body, brown or gray, subcoriaceous to coriaceous, opaque, the veins not contrasting in color to surface (Figure: Gentry, 1973: fig. 12, as *Distictella magnoliifolia*).

Distribution. *Distictella racemosa* var. *racemosa* is found primarily along the Amazon and its tributaries in Brazil (Pará, Amazonas, Roraima, and Mato

Grosso), Peru (Loreto), Colombia (Caquetá, Vaupés, and Amazonas), and Bolivia (Pando [type of *Bignonia rusbyi*] and La Paz). It is also found in southern Venezuela (Amazonas) and northern Guyana, Suriname, and French Guiana. It is found in seasonally inundated forests (igapó or várzea), generally associated with black water, usually at elevations below 200 m elevation (one collection from Guyana was collected at 500 m). Figure 2B.

Phenology. Flowering and fruiting throughout the year.

Discussion. *Bignonia rusbyi* is placed in synonymy of *Distictella racemosa* var. *racemosa* based on examination of type material. Because the type of *B. rusbyi* lacks fruits, the varietal placement is not absolute, but is supported by the leaflets without trichomes and with the presence of glands at both the apex and in the basal lateral vein axils and the wide angle of the lateral veins with the midrib (ca. 45°).

Distictis angustifolia is placed in synonymy with some uncertainty. The leaflets of the type collection are narrowly lanceolate and only about one third as wide as long, conditions rarely seen in *Distictella racemosa* var. *racemosa*.

The captions of the plates of *Distictella lutescens* and *D. negrensis* were swapped in the original publication (Sampaio & Freire, 1936). *Distictella lutescens* can be confidently placed in synonymy of *D. racemosa* var. *racemosa* based on examination of the flowering isotype (RB) and illustration of the holotype in fruit. Examination of the isotype (RB) and illustration of the holotype of *D. negrensis* supports its placement in synonymy of *D. racemosa*, but the absence of fruit makes the varietal placement less certain. Its placement in synonymy of *D. racemosa* var. *racemosa* is supported by the secondary varietal characteristics (leaflets without trichomes and with glands at both the apex and in the basal lateral vein axils and lateral veins forming a 45° angle with midrib) and in the collection of the type along the margins of the Rio Negro with the type of *D. lutescens*.

Specimens from Venezuela and Guyana have capsules that are thicker and relatively broader than other collections of *Distictella racemosa* var. *racemosa* and approach *D. cremersii*. However, the seeds in these collections have much larger wings than those of *D. cremersii*, which has the wings nearly completely reduced, and the leaflets are totally without trichomes on the abaxial surface (vs. pilose in the lateral vein axils in *D. cremersii*).

Individuals of *Distictella racemosa* var. *racemosa* with smaller leaflets are often confused with *D. cuneifolia* (leaflets 4.7–8 × 1.8–3.3 cm). However, specimens of *D. cuneifolia* usually can be recognized by the leaflets, which are often spatulate and lack apical glands, and the fruit, which are spatulate and smaller (6–6.7 × 2.5–2.7 cm) than those of *D. racemosa* var. *racemosa* and have smaller seeds (9–12 × 26–28 mm) with membranous and hyaline wings. *Distictella cuneifolia* is also found in savannas, while *D. racemosa* var. *racemosa* is found in forests.

Selected specimens examined. BOLIVIA. **La Paz:** Prov. Iturralde, Luisita, W del Río Beni, zona inundata del Río Muqui, *S. G. Beck & R. Haase 10132* (MO). BRAZIL. **Amazonas:** Mun. Humayta, near Livramento on Rio Livramento, *B. A. Krukoff 6728* (MO). **Mato Grosso:** near Tabajara, upper Machado River region, *B. A. Krukoff 1475* (MO). **Pará:** Mun. de Oriximiná, rio Trombetas, *C. A. Cid Ferreira et al. 1389* (MO). **Roraima:** Rio Branco, Curiucu, *S. Mori et al. 20442* (MO). COLOMBIA. **Amazonas:** Rio Caqueta, Araracuara, *A. van Dulmen & N. Matapi 42* (MO). **Caquetá:** Región de Araracuara, quebrada el engaño, 2–5 km arriba desembocadura, *D. Restrepo & A. Matapi 484* (MO). **Vaupés:** Mitú and vic., along Río Tí, *J. L. Zarucchi 2109* (MO). FRENCH GUYANA. Piste de Risque Tout, Km 10 (environ) à partir de Montsinéry, *F. Billiet & B. Jadin 2037* (MO). GUYANA. Potaro–Siparuni Region, Kaieteur Falls Natl. Park, *W. Hahn et al. 4761* (MO). PERU. **Loreto:** Banks of Río Nanay, *F. Woytkowski 5140* (MO); Requena Prov., Río Tapiche, tributary of Río Ucayali, ca. 1 hr. by 40 h.p. motor above Requena, *A. H. Gentry et al. 21293* (MO). SURINAME. High creek forest along Cola Creek at crossing with rd. Zanderij–Saramacea R., *N. M. Heyde 599* (MO). VENEZUELA. **Amazonas:** Dep. Atabapo, Caño Negro, río arriba dede la confluencia con el río Cunucunuma, *J. A. Steyermark et al. 126235* (MO).

17b. Distictella racemosa (Bureau & K. Schum.) Urb. var. **translucida** A. Pool, var. nov. TYPE: Colombia. Antioquia: autopista Medellín–Bogotá, vereda La Josefina, camino hacia El Pitál, Mpio. de San Luis, 800 m, 29 Nov. 1983 (fr.), *S. Hoyos & J. Hernandez 535* (holotype, MO!; isotype, JAUM not seen). Figure 3F, G.

Distictella broadwayana Urb., Repert. Spec. Nov. Regni Veg. 14: 310. 1916. Syn. nov. TYPE: Tobago. Near Menna, 23 Mar. 1914, *W. E. Broadway 4753* (holotype, BM not seen, digitized image!).

Haec varietas a varietate typica seminibus alis membranaceis translucidis praeditis et capsula plerumque curva distinguitur.

Liana; young branchlets terete, the nodes usually flattened. Leaflets with lateral veins initiating at a 20°–45° angle with the midrib, abaxial surface with axils of lateral veins with midrib puberulent or pilose, rarely without trichomes, and sometimes with additional trichomes along midrib (rarely also along lateral veins), sometimes with glandular fields at apex, occasionally in basal lateral vein axils, rarely in both locations. Calyx glandular fields 2 or 2.5 pairs. Capsule oblong, curved, 11–22 × 3.5–5.5 cm, 0.5–

2.5 cm diam., base rounded and truncate, apex acute, or acute or obtuse and rounded, one valve concave and the other convex (rarely not curved, and both valves somewhat flattened), drying reddish brown, densely pubescent with minute, appressed, ferruginous trichomes, with or without glands, not granular, midrib prominent. Seeds 15–25 × 55–85 mm, wings poorly to well demarcated from seed body, reddish brown with tips yellowish brown, membranous, hyaline, especially at tips, the veins contrasting in color to surface.

Distribution. *Distictella racemosa* var. *translucida* is known from Tobago (type of *D. broadwayana*), western Colombia (Antioquia, Chocó, Santander, Caquetá, Amazonas), Ecuador (Napo), central Peru (Amazonas, Loreto, San Martín, Junín, Madre de Dios, Puno), southern and eastern Venezuela (Amazonas, Bolívar, Delta Amacuro, Sucre), northwestern Brazil (Amazonas, Acre, Pará, Rondônia, Roraima), and the Guianas. It is usually found in forest in non-inundated areas between 100 and 950 m. Figure 2B.

Phenology. Flowering August to May; fruiting April, May, July, September to December.

IUCN Red List category. The number of collections of *Distictella racemosa* var. *translucida* studied (88) and the wide range of its distribution suggest that this taxon is of Least Concern (LC) status over its entire range, according to IUCN Red List criteria (IUCN, 2001). Threats to particular populations cannot be determined in the present study.

Discussion. Examination of type material of *Distictella broadwayana* places it in synonymy of *D. racemosa* at the species level. This treatment follows that of Sandwith (1938a, 1954, 1965). Because the type of *D. broadwayana* lacks fruits, the varietal placement, as a synonym of *D. racemosa* var. *translucida*, is highly probable but not absolute. The name *D. broadwayana* has been little employed; the only specimen observed annotated with this name was the type, and the only publications accepting this name were those of Urban (1916a, b). It was this lack of name usage in addition to its ambiguity, due to absence of capsule and seed, that led to the decision to publish *D. racemosa* var. *translucida* as a new variety as opposed to simply changing the rank of *D. broadwayana*.

Vegetatively, *Distictella racemosa* var. *translucida* is very similar to *D. cremersii*, which differs in having fruits that are relatively broad and thick (7–11 × 4–5.5 cm, 3–4 cm diam.) and having seeds with the wings almost entirely reduced. Flowering material has not been associated with *D. cremersii*; it is possible that some of the flowering material cited here for *D. racemosa* var. *translucida* is actually *D. cremersii*.

Distictella racemosa var. *translucida* can also be compared with *D. parkeri*. The latter has the undersurface of the leaflets densely tomentose with small trichomes. The midrib of the capsule of *D. parkeri* is not, or only slightly, prominent. In addition, the leaflet base of *D. parkeri* is often cordate or subcordate and never acute or obtuse. Both species can have rounded leaflet bases.

Selected specimens examined. BRAZIL. **Acre:** Vic. of Serra da Moa, *G. T. Prance et al. 12191* (MO). **Amazonas:** Mun. Humayta, near Livramento, on Rio Livramento, *B. A. Krukoff 6915* (MO). **Pará:** Rio Jarí, Monte Dourado, Serrinha, *N. T. Silva 1481* (K). **Rondônia:** Mun. Porto Velho, localidade de Abunã, próximo a antiga estrada de ferro Abunã–Mutumparaná a 2 km de Abunã, *C. A. Cid Ferreira 8868* (MO). **Roraima:** Vic. of Uaicá airport, Rio Uraricoeira, *G. T. Prance et al. 10903* (MO). COLOMBIA. **Amazonas:** Mpio. Tarapacá, Corregimiento de Tarapacá, Parque Nacional Natural Amaycayacu, sector Lorena (R. Cotuhé), *A. Rudas et al. 5151* (MO). **Antioquia:** Autopista Medellín-Bogotá, sector Río Samaná–Río Claro, camino hacia la vereda Tulipán, Mpio. de San Luis, *A. Cogollo & C. Estrada 200* (MO). **Caquetá:** 28 km E of Morelia toward Río Pescado, *A. H. Gentry et al. 9076* (MO). **Chocó:** New rd. being built from S of Yuto to Lloro, *A. H. Gentry & M. Fallen 17815* (MO). **Santander:** Las Colonias (Carare Opón Santander), *E. Renteria et al. 1545* (MO). ECUADOR. **Napo:** Rd. Coca, Puerto Francisco de Orellana–Curaray, 20–30 km S of Coca, *G. Harling & L. Andersson 11947* (MO). FRENCH GUIANA. Parcelle Arbocel, piste de St. Elie, Km 14, recur après coupe, *M. F. Prévost 590* (MO). GUYANA. Potaro–Siparuni region, Chenapou, Amerindian village, Patumona, 50 km upstream from Kaieteur Falls, *L. P. Kvist et al. 332* (MO). PERU. **Amazonas:** Bagua Prov., Distr. Imaza, región del Marañon, comunidad de Yamayakat, Río Marañon, *R. Vásquez et al. 19329* (MO). **Junín:** Prov. Chanchamayo, rd. from Bajo Pichinaki to Alto Pichinaki, betw. Km 6 and 16, *B. A. Stein 2410* (MO). **Loreto:** Prov. Maynas, Mishana, Río Nanay halfway betw. Iquitos and Santa Maria de Nanay, *C. Díaz C. et al. 1029* (MO); Prov. Maynas, Puerto Almendras (Centro de Investigación y Enseñanza Forestal [CIEFOR]–Universidad Nacional de la Amazonía Peruana [UNAP]), *R. Vásquez & N. Jaramillo 6517* (MO); Aguaitai, *R. J. Seibert 2233* (MO). **Madre de Dios:** Río La Torre, 4–15 km upriver from Explorer's Inn, near confluence of Río Tambopata and Río La Torre, 39 km SW of Puerto Maldonado, *S. F. Smith et al. 1628* (MO). **Puno:** Ridge betw. Río Candamo and Río Guacamayo, *A. H. Gentry et al. 76930* (MO). **San Martín:** Mariscal Caceres, Tocache Nuevo, trail up Río Huallaga Valley toward Limón, *A. H. Gentry et al. 25571* (MO). SURINAME. Tapanahoni R., Kapoea Rapids, *H. E. Rombouts 655* (MO). VENEZUELA. **Amazonas:** Alrededores de San Simón de Cocuy, ca. 2–3 km O de Piedra de Cocuy, *G. Morillo et al. 4134* (MO); Dep. Atures, virgin rainforest along Río Cataniapo, 44–45 km SE of Puerto Ayacucho, 3 km downstream from dam site, *J. A. Steyermark et al. 122158* (MO). **Bolívar:** Reserva Forestal Imataca, carretera Casa Blanca–San Martín de Turumbán (Anacoco), hasta sector Río Cuyuní, *B. Stergios et al. 3848* (MO). **Delta Amacuro:** Dep. Tucupita, 5–14 km ESE of Los Castillos de Guayana, *G. Davidse & A. C. González 16294* (MO). **Sucre:** Peninsula de Paria, above Las Melenas, N of Río Grande Arriba, SE of Cerro de Humo, *J. A. Steyermark & R. Liesner 120938* (MO).

18. Distictella reticulata A. H. Gentry, Ann. Missouri Bot. Gard. 65: 728. 1978 [1979]. TYPE: Brazil. Amazonas: Manaus, Igarapé de Cachoeira Alta do Tarumã, 28 Aug. 1962, *W. Rodrigues & J. Chagas 4610* (holotype, INPA not seen; isotype, MO!).

Liana; young branchlets terete, drying dull brown, hollow or solid, pubescent with trichomes weakly ascending; trichomes tan or white, 0.1–0.4 mm; pseudostipules caducous, spatulate, 3.5–5 × 1–2 mm. Leaves bifoliolate or trifoliolate, trifid tendril occasionally present; petiole 6–15 mm, with pubescence like that of branchlets; petiolules 5–15 mm, with pubescence like that of branchlets; leaflets elliptic to ovate, 5–13.5 × 3–8 cm, coriaceous, 4 or 5 pairs of lateral veins, each lateral vein initiating at a 20°–45° angle with the midrib and extending toward apex before anastomosing with the tertiary veins, tertiary veins conspicuous but not distinguishable from the higher order venation, together strongly reticulate and forming a fine, closed network, all veins immersed adaxially and raised abaxially, both surfaces drying brownish green, adaxial surface nearly without trichomes, with a few trichomes at the base along the midrib, scattered lepidote, without glands, abaxial surface with a dense covering of trichomes like those of branchlet or slightly smaller, mainly on venation reticulation and pointing in toward the areoles, abundantly lepidote, without visible glands, margin recurved, base rounded, apex acute to rounded. Inflorescence a raceme or racemose panicle, peduncle with rachis 5–29 cm with 5 to 16 flowers, peduncle 2.5–3.2 mm wide at base, peduncle, rachis, and pedicels drying reddish brown, pubescent with trichomes like branchlets, bracteoles absent or not seen; calyx 10–14 × 10–12 mm, coriaceous, pubescent with dense, tan, strongly appressed trichomes to 0.3 mm, glandular fields 2 pairs; corolla white, infundibular from cylindric base, curved 1/4–1/3 distance from base, 4.5–6.5 cm, tube 3–4.5 cm with cylindric base 9–12 mm long and mouth 15–25 mm wide, externally and internally pubescent with minute trichomes above glabrous base, internally slightly glandular-villous at stamen insertion, lobes 15–20 × 15–20 mm; stamens and staminode inserted 12–13 mm from base of corolla tube, anthers 3.5–4.2 mm, longer filaments ca. 22 mm, shorter filaments ca. 18 mm, staminode ca. 4 mm; disc 2–2.5 × 4–4.5 mm; pistil ca. 3.5 cm, ovary ca. 4 × 2 mm, stipe absent, stigma broadly oblong. Capsule elliptic, not curved, ca. 6 × 2.5–2.8 cm, ca. 0.5 cm diam., base acute and truncate, apex acute and apiculate, both valves slightly compressed or sometimes one very slightly convex and the other slightly concave, drying reddish brown, densely pubescent with minute, appressed, ferruginous trichomes, midrib not evident, wall ca. 1.5 mm thick. Seeds ca. 15 × 35–50 mm, wings poorly demarcated from seed body, reddish brown with tips tan, membranous, hyaline, especially at tips, the veins not contrasting in color to surface.

Distribution. *Distictella reticulata* is known only from Amazonas, Brazil, in the vicinity of Manaus. The elevation was not indicated on the labels; most collections were made along the margins of narrow rivers. Figure 1A.

Phenology. Flowering May to July; fruiting August.

Discussion. The tertiary veins of the leaflets of *Distictella reticulata* cannot be distinguished from the higher order venation and form a strongly raised, very fine reticulation on the abaxial surfaces of the leaflets, similar to that found on the simple leaves of *D. monophylla* and the leaflets of *D. dasytricha*. *Distictella elongata* and *D. obovata* also have a very fine and strongly raised network of veins on the abaxial leaflet surfaces, but usually with the tertiary veins distinct from the higher orders of venation. *Distictella reticulata* is easily distinguished from *D. monophylla*, a shrub with simple leaves, and *D. dasytricha*, which has much longer (1–2 mm) trichomes. *Distictella elongata* differs from *D. reticulata* in its leaflets, which have cuneate to attenuate bases, fruits with an acuminate apex and prominent midrib, and small seeds (8–10 × 25–28 mm). *Distictella obovata* can be separated from *D. reticulata* by its leaflets, which are obovate or oblanceolate with a cuneate base and a glossy adaxial surface, and its fruits, which dry dull black and are quite warty.

Selected specimens examined. BRAZIL. **Amazonas:** Manaus, margem do igarapé da cachoeira Alta, Estrada Forquilha, *J. Chagas 1705* (K), *1086* (K); Manaus, margem do igarapé do parque 10, *J. Chagas 3994* (K); Manaus, margem do igarapé da cachoeira Alta do Tarumã, *J. Chagas 1330* (K); Manaus, *Francisco & Dionisio 3940* (K).

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APPENDIX 1. Index to Numbered Exsiccatae.

Collections are listed alphabetically by collector and collection number with each collection number followed by a species number in parentheses. The index includes all specimens entered into Tropicos that were identified to species by A. Pool and are without qualifiers (aff., cf., or "?"), excluding those records lacking collector name. Boldface indicates type collections.

LIST OF SPECIES

1. *Distictella arenaria* A. H. Gentry
2. *Distictella campinae* A. Samp.
3. *Distictella chocoensis* A. H. Gentry
4. *Distictella cremersii* A. H. Gentry
5. *Distictella cuneifolia* (DC.) Sandwith
6. *Distictella dasytricha* Sandwith
7. *Distictella elongata* (Vahl) Urb.
8. *Distictella laevis* (Sandwith) A. H. Gentry
9. *Distictella lohmanniae* A. Pool
10. *Distictella magnoliifolia* (Kunth) Sandwith
11. *Distictella mansoana* (DC.) Urb.
12. *Distictella monophylla* Sandwith
13. *Distictella obovata* Sandwith
14. *Distictella parkeri* (DC.) Sprague & Sandwith
15. *Distictella pauciflora* A. H. Gentry
16. *Distictella porphyrotricha* Sandwith
17a. *Distictella racemosa* (Bureau & K. Schum.) Urb. var. *racemosa*
17b. *Distictella racemosa* var. *translucida* A. Pool
18. *Distictella reticulata* A. H. Gentry

Allen, P. H. 3210 (10). *Alvarenga, D. & E. Curado Lopes 239* (11). *Alvarenga, D. & F. M. Paixão 651* (11). *Alvarenga, M. s.n. (INPA 120328)* (8). *Amaral, I. L. et al. 545* (17a), *932* (8), *935* (8). *Amaral, M. C. et al. 7151* (11). *Anderson, W. R. 10539* (8), *10928* (8), *11965* (11). *Anderson, W. R. et al. 6555* (11), *8273* (11), *8798* (11), *10216* (11), *10945* (11), *10999* (17a). *Aparecida da Silva, M. & D. Alvarenga 933* (11). *Aparecida da Silva, M. & C. C. S. Ferreira 3111* (11). *Aquilante, D. 6* (11). *Arbo, M. M. et al. 4878* (11), *4999* (11). *Aronson, J. & F. Rodriges V. 861* (17b). *Ayala, F. 257* (17a). *Ayala, F. et al. 3366* (17a). *Aymard, G. 7993* (17a). *Aymard, G. & L. Delgado 8383* (12). *Aymard, G. et al. 4057* (17b). *Azevedo, M. L. M. et al. 215* (11).

Barreto, K. D. et al. 1948 (11), *2354* (11), *3431* (11). *Beck, S. G. 4941* (11), *20589* (5). *Beck, S. G. & R. Haase 10003* (11), *10132* (17a). *Berry, P. E. 1382* (10), *1426* (10), *1426-a* (10), *1496* (10). *Berry, P. E. & E. Melgueiro 5315* (12). *Berry, P. E. et al. 6026* (12), *6173* (12), *6250* (12), *6542* (12), *6549* (12). *Besse, L. et al. 1794* (11). *Bilby, R. et al. 339* (2). *Billiet, F. & B. Jadin 1604* (17a), *2037* (17a), *5762* (7), *6394* (17b). *Black, G. et al. 57-19576* (7). *Bonpland, A.* **973 (10)**, *s.n.* (10). *Broadway, W. E.* **4753 (17b)**.

Calderon, C. E. et al. 2703 (8). *Cardenas L., D. et al. 2940* (17b). *Cardiel, J. M. et al. CHIN-292* (17b). *Castillo, A. 4292* (17a), *4995* (17a), *5308* (17a), *6995* (17a). *Castillo, A. et al. 3502* (1). *Chagas, J. 1086* (18), *1330* (18), *1705* (18), *3994* (18). *Cid Ferreira, C. A. 5808* (8), *8868* (17b). *Cid Ferreira, C. A. & J. Lima 3630* (17a). *Cid Ferreira, C. A. et al. 497* (2), *820* (17a), *1264* (7), *1389* (17a), *2210* (17a), *4307* (11), *4446* (11), *5219* (17b), *8664* (2). *Cogollo, A. & C. Estrada 200* (17b). *Cogollo, A. et al. 4590* (17b). *Coradin, L. & M. R. Cordeiro 1083* (10). *Cordeiro, I. s.n. (CFCR653)* (11). *Correa de Méllo, J. 13* (11). *Costa, F. N. et al. 149* (11). *Cremers, G.* **4589 (4)**, *5281* (17b), *8377* (14), *9528* (7). *Cremers, G. & J.-J. de Granville 14427* (7). *Cremers, G. & M. Hoff 11311* (17b), *11344* (17b). *Cremers, G. et al. 12507* (14). *Croat, T. B. 19905* (17a), *20049* (17b). *Cruz, J. S. de la 2734* (14).

Daly, D. C. et al. 993 (2). *Damião, C. 3001* (17a), *3089* (17a). *Davidse, G. & A. C. González 16294* (17b). *G. Davidse et al. 17568* (2). *Davidson, C. & J. Revilla 5370* (17a). *Davis, E. W. 140-a* (1). *Díaz C., C. & H. Osores 662* (17a). *Díaz C., C. et al. 236* (17a), *605* (17a), *1029* (17b). *Dodson, C. H. & J. Torres 2940* (17b). *Ducke, A.* **8022 (17a)**, ***8022-a*** **(17a)**, ***s.n. (RB 22688)*** **(2)**. *Dulmen, A. van & N. Matapi 42* (17a).

Eiten, G. et al. 5797 (11), *5813* (11), *6013* (11). *Encarnacion, F. 80* (17a). *Evans, R. & G. Lewis 1869* (4).

Ferrucci, S. 793 (11). *Feuillet, C. 1588* (7). *Fosberg, F. R. 43323* (11). *Foster, P. F. et al. 528* (11). *Francisco & Dionisio 3940* (18). *Freitas, M. A. et al. 469* (9).

Gentry, A. H. 12747 (17a), *12969* (10), *12976* (9), *13062* (17a). *Gentry, A. H. & P. Berry* **14615 (1)**, *14618* (1), *14633* (1). *Gentry, A. H. & D. Daly 18322* (17a). *Gentry, A. H. & C. Díaz S. 28199* (17b), *28225* (6), *28234* (6). *Gentry, A. H. & M. Fallen 17815* (17b). *Gentry, A. H. & R. Foster 70871* (11). *Gentry, A. H. & C. Feuillet 63205* (7). *Gentry, A. H. & N. Jaramillo 57925* (17b). *Gentry, A. H. & P. Núñez 69446* (11), *69789* (11). *Gentry, A. H. & R. Ortiz 74243* (17a). *Gentry, A. H. & A. Pinheiro 13130* (2). *Gentry, A. H. & G. Prance 11217* (10). *Gentry, A. H. & J. Ramos 13067* (17a). *Gentry, A. H. & E. Renteria A.* **24089 (3)**. *Gentry, A. H. & J. Revilla 20493* (17a), *20825* (17a). *Gentry, A. H. & B. Stein 46381* (10), *46685* (17a), *47159* (17a). *Gentry, A. H. & S. Tillett 10874* (1), *10900* (10). *Gentry, A. H. & K. Young 32010* (17b). *Gentry, A. H. & Elsa Zardini 50256* (14), *50342* (7). *Gentry, A. H. et al. 9076* (17b), *10484* (13), *10565* (16), *10566* (13), *10571* (16), *10660* (14), *15637* (17b), *15844* (17a), *18557* (17a), *20335* (17a), *21293* (17a), *25571* (17b), *42096* (17b), *44250* (11), *44335* (11), *45995*

(17b), *47844* (3), *47957* (3), *49589* (11), *51283* (17b), *53286* (3), *59173* (11), *63329* (17b), *74053* (11), *76651* (17b), *76930* (17b). *Gillespie, L. J. 902* (14). *Gottsberger, I. S. 220* (11), *867* (11). *Gounelle, E. s.n.* (11). *Granville, J.-J. de 2080* (4). *Grifo, F. & J. Solomon 773* (11). *Grotta, A. S. s.n. (SPF15220)* (11), *s.n. (SPF37459)* (11). *Guanchez, F. 1119* (12). *Guillén, R. & R. Choré 3441* (5). *Guillén, R. & S. Coria 1522A* (5), *2111* (5). *Guillén, R. & V. Roca 3092* (5), *3212* (5), *3501* (5). *Guillén, R. et al. 3897* (11). *Gutiérrez, E. et al. 558* (11), *767* (11), *1102* (11).

Hahn, W. & S. Tiwari 5119 (14). *Hahn, W. et al. 4761* (17a). *Harling, G. & L. Andersson 11947* (17b). *Hatschbach, G. 23542* (11), *28074* (11), *35915* (11), *39444* (11), *40808* (11), *45956* (11). *Hatschbach, G. & T. P. Ramamoorthy 38187* (11). *Hatschbach, G. et al. 51080* (11), *60189* (11). *Heringer, E. P. 14952* (11), *15412* (11). *Heringer, E. P. et al. 3095* (11), *3195* (11), *3522* (11). *Heyde, N. M. 591* (7), *599* (17a). *Hill, S. R. 13199* (17a). *Hoffman, B. & M. van Roosmalen 5355* (14). *Hoffman, B. et al. 542* (14), *5304* (14). *Honda, M. & F. Mello 35996* (17a). *Hoyos, S. & J. Hernandez* **535 (17b)**. *Huber, O. 2514* (12), *3173* (12), *3953* (12), *4061* (12), *6007* (12). *Huber, O. & E. Medina 5892* (12). *Huber, O. & S. S. Tillett 2920* (12), *2938* (12), *5282* (12), *5355* (12), *5539* (12), *5587* (12). *Huber, O. et al. 5687* (10). *Humbert, H. 27479* (10).

INPA 3994-24 (9). *Inuma, J. C. 41* (17a). *Irwin, H. S. 2350* (11). *Irwin, H. S. et al. 6291* (11), *11177* (11), *11445* (11), *12021* (11), *13415* (11), *15389* (11), *15653* (11), *16821* (11), *25428* (11), *25684* (11), *27429* (11).

Jones, J. 9689 (17a).

Kawasaki, M. L. 265 (10). *Killeen, T. et al. 4873* (11), *5543* (11), *6045* (11), *8197* (11). *Kirkbride Jr., J. H. & E. Lleras 2860* (11). *Knapp, S. & J. Mallett 2894* (14). *Knob, A. et al. 640* (17a). *Koch-Grünberg, T.* **74 (10)**. *Krapovickas, A. & C. L. Cristobal 42946* (11). *Krieger, P. L. 7828* (11). *Krukoff, B. A. 1475* (17a), *6266* (17a), *6728* (17a), *6915* (17b), *8767* (17b), *8906* (17b). *Kvist, L. P. et al. 332* (17b).

Landrum, L. R. 4215 (11). *Lasser, T. 1793* (16). *Liesner, R. 3377* (10), *3442* (10), *3784* (10), *6418* (10), *6723* (10), *15682* (17a), *16236* (17a), *19154* (16), *23864* (16), *24601* (17a), *25720* (1), *25767* (1). *Liesner, R. & F. Delascio 21954* (12). *Liesner, R. & V. Funk 15847* (17a). *Liesner, R. & B. Holst 20668* (13), *20751* (13). *Lohmann, L. G. & C. F. da Silva* **20 (9)**. *Lohmann, L. G. et al. 8* (11), *70* (11). *Loureiro, A. et al. s.n. (INPA47905)* (10). *Lugo, H. 3121* (17b).

Maas, P. J. M. et al. 4307 (13), *5711* (13). *Macêdo, A.* **1906 (6)**, *1906 [a]* (6). *Machado, F. & S. Assumpção S. s.n. (SP8976)* (11). *Maguire, B. & D. B. Fanshawe* **32637 (13)**. *Maguire, B & J. M. Pires 40840* (2). *Maguire, B. & L. Politi* **27717 (12)**, *27799* (12). *Maguire, B. et al. 30662* (12), **30788 (8)**, *56936* (11). *Marcano-Berti, L. et al. 101-981* (16). *Marinho, L. R. 340* (6), *377* (17a). *Martinelli, G. 6850* (7). *Martius, C. F. s.n.* (17a). *McDaniel, S. & M. Rimachi Y. 19581* (17b), *25799* (17a), *26609* (17a). *McDaniel, S. et al. 24861* (17a). *McDowell, T. 3250* (14), *3776* (17a). *McDowell, T. & D. Gopaul 2575* (14), *2864* (13). *Mello-Silva, R. & J. R. Pirani CFCR10874* (11). *Mendonça, R. C. & F. C. Silva 65* (11). *Mendonça, R. C. et al. 2020* (11), *3580* (11). *Monsalve B., M. 1916* (3). *Morawetz, W. & B. Wallnöfer 14-271085* (17b). *Moretti 636* (4). *Mori, S. & B. Boom 14832* (14). *Mori, S. & C. Gracie 21824* (17a). *Mori, S. et al. 14933* (14), *20442* (17a), *21649* (17b). *Morillo, G. et al. 3904* (10), *3908* (10), *4134* (17b), *4199* (10). *Mostacedo, R. & R. Abbott 2866* (11). *Muniz, C. F. et al. s.n. CFSC7879* (11).

Nee, M. 34597 (5), *34758* (11), *41162* (11).

Oldeman, R. A. A. 2689 (17a), *B-997* (4). *Oliveira, P. & W. R. Anderson 428* (11).

Pabst, G. 9098 (11). *Parker* **s.n. (14)**. *Pearce, R. s.n.* (11). *Pena, M. et al. 202* (5). *Pereira, B. A. S. 937* (11). *Pereira, B. A. S. & R. C. Mendonça 372* (11). *Philcox, D. & A. Fereira 3883* (11). *Pipoly, J. J. & R. Boyan 7570* (14). *Pipoly, J. J. & G. Gharbarran 10191* (14). *Pipoly, J. J. & H. Godfrey 7450* (14). *Pipoly, J. J. et al. 14909* (17a), *15005* (17b). *Pires, M. J. P. et al. 819* (16), *819-a* (16), *14109* (17a). *Pivari, M. O. D. & D. S. Pifano 87* (11). *Plowman, T. & J. Schunke V. 11670A* (17b). *Poole, J. M. 1771* (17a), *1856* (17a). *Prance, G. T. 13876* (17a). *Prance, G. T. & T. D. Pennington 1765* (17a). *Prance, G. T. et al. 1291* (2), *2560* (17a), *3366* (17a), *3730* (10), *4862* (10), *6678* (11), *10659* (11), *10903* (17b), *11414* (9), *12191* (17b), *14493* (17a), *14614* (17a), *15224* (17a), *20676* (17a), *23051* (9), *24653* (17a), *28860* (2). *Prévost, M.-F. 428* (14), *495* (17b), *590* (17b), *1202* (17a), *1736* (14), *3481* (17b), *4100* (7), *4109* (7), *4437* (7). *Puig, H. 10247* (17b).

Quevedo, R. et al. 2577 (5), *2611* (5).

Rabelo, B. V. et al. 2858 (14). *Ramírez C., R. 22* (17b). *Ramírez, J. G. & D. Cárdenas 1972* (17b). *Renteria, E. et al. 1545* (17b). *Restrepo, D. & A. Matapi 484* (17a). *Revilla, J. 156* (17a), *1353* (17a), *1746* (17a), *1790* (17a), *1865* (17a). *Rimachi Y., M. 663* (17a), *6423* (17b), *7230* (17b), *8163* (17a), *10382* (17a). *Robertson, K. R. & D. F. Austin 288* (14). *Rodrigues, W. 9430* (8). *Rodrigues, W. & J. Chagas* **4610 (18)**. *Rodrigues, W. & D. Coelho 4125* (10). *Rodrigues, W. et al. 10254* (17a). *Rohr, J. P. B. von* **2001 (7)**. *Rombouts, H. E. 655* (17b). *Romero-Castañeda, R. 1229* (17a). *Rosa, N. A. & M. R. Santos 1862* (8). *Roth, L. 1743* (11). *Rudas, A. et al. 5151* (17b). *Rusby, H. H.* **1140 (17a)**.

Saldías, M. 3790 (11). *Sánchez, L. et al. 337* (11). *Santos, G. dos et al. 240* (17a), *247* (17a), *249* (17a), *250* (17a), *272* (17a). *Sastre, C. 6436* (17b). *Sastre, C. & F. Sastre 253* (17b). *Schomburgk, M. R. 1709* (14). *Schunke V., J. M. 79* (17a), *2897* (17b), *6262* (17a). *Seibert, R. J. 1891* (17a), *2233* (17b). *Seidel, R. & M. Schulte 2344* (11). *Shepherd, J. D. 747* (17b). *Silva, A. S. L. da et al. 547* (9). *Silva, F. C. 253* (11). *Silva, M. F. et al. 38192* (17a), *38646* (17a). *Silva, M. G. & A. Pinheiro 4184* (11), *4452* (11). *Silva, M. G. & C. Rosario 4917* (7). *Silva, N. T. 1481* (17b), *4356* (7). *Silva, N. T. & U. Brazão 60988* (17a). *Silva, N. T. & M. R. Santos 4703* (7). *Silva Manso, A.* **s.n. (11)**. *Simoes, J. 4* (11). *Smith, J. F. et al. 4164* (7). *Smith, S. F. et al. 1628* (17b). *Soejarto, D. D. & Cardozo 632* (17a). *Solomon, J. C. 17685* (11), *18428* (11). *Souza, V. C. & L. Ferraro 2574* (11). *Souza, V. C. et al. 9846* (11). *Spruce, R. 1721* (17a). *Steege, H. ter et al. 398* (14). *Stein, B. A. 2410* (17b). *Stergios, B. 10318* (17b). *Stergios, B. & G. Aymard 7600* (17a), *9233* (17b). *Stergios, B. & J. Velazco 14386* (17a), *14754-b* (17a). *Stergios, B. et al. 3848* (17b), *9634* (17a). *Steward, W. et al. P20322* (10). *Steyermark, J. A. 93800* (13), **106343 (15)**, *107474* (17b). *Steyermark, J. A. & L. Aristeguieta* **98 (16)**. *Steyermark, J. A. & G. S. Bunting 103108* (12). *Steyermark, J. A. & R. Liesner 120938* (17b). *Steyermark, J. A. & S. Nilsson 324* (13). *Steyermark, J. A. & P. Redmond 112819* (1). *Steyermark, J. A. et al. 92182* (13), *113086* (1), *115553* (16), *117818* (13), *122158* (17b), *124541* (12), *126235* (17a). *Sytsma, K. J. et al. 5100* (12).

Tavares, A. S. 358 (4). *Tessmann, G. 5150* (17b). *Thomas, W. W. et al. 5336* (10), *5591* (11). *Tillett, S. S. & C. L. Tillett 43837* (13), *45870* (17b). *Triana, J. J. 4124-10* (3).

Ule, E. **6111 (17a)**.

Vargas C., I. G. et al. 3790 (11). *Vásquez, R. & N. Jaramillo 194* (17a), *1190* (17b), *6517* (17b), *10211* (17a), *10212* (17a), *10275* (17b), *11756* (17a), *13039* (17a). *Vásquez, R. et al. 2749* (17b), *18604* (17b), *19329* (17b). *Vicentini, A. et al. 818* (11). *Vieíra, G. et al. 108* (8). *Vieira, M. G. et al. 990* (11).

Walter, B. M. T. et al. 621 (11). *Williams, L. 15309* (17a). *Woytkowski, F. 5140* (17a), *5158* (17a). *Wullschlaegel, H. R.* ***1033* (17a)**. *Wurdack, J. J. & L. S. Adderley 43008* (17a).

Yanagizawa, Y. s.n. (SP8981) (11), *s.n. (SP8982)* (11).

Zarucchi, J. L. 1293 (17a), *2109* (17a). *Zarucchi, J. L. & C. E. Barbosa 3437-a* (1). *Zarucchi, J. L. & R. E. Schultes 1027* (17a). *Zarucchi, J. L. et al. 2600* (8), *3010* (17a), *3173* (17a).